DECEMBER, 1944

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THE Refrigeration Industry

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MERCHANDISING

AIR CONDITIONING
MACHINERY

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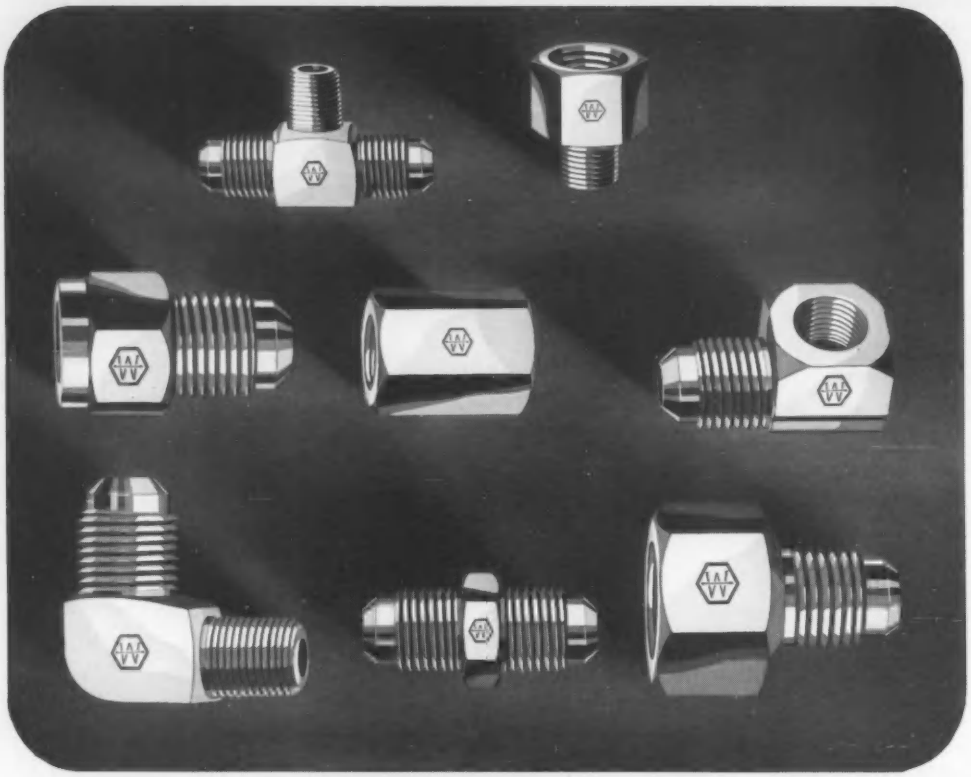

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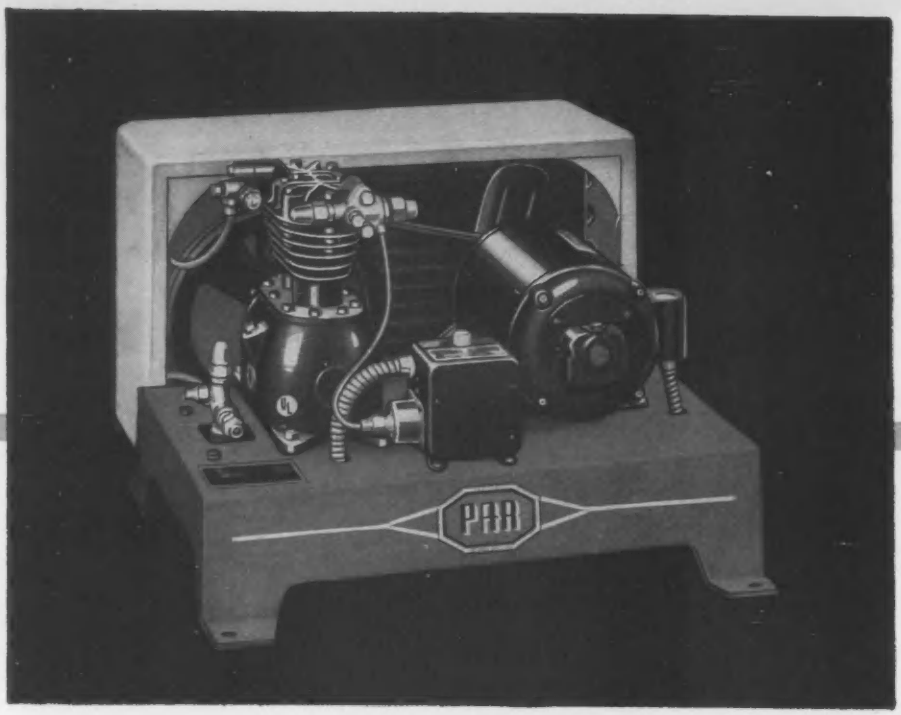

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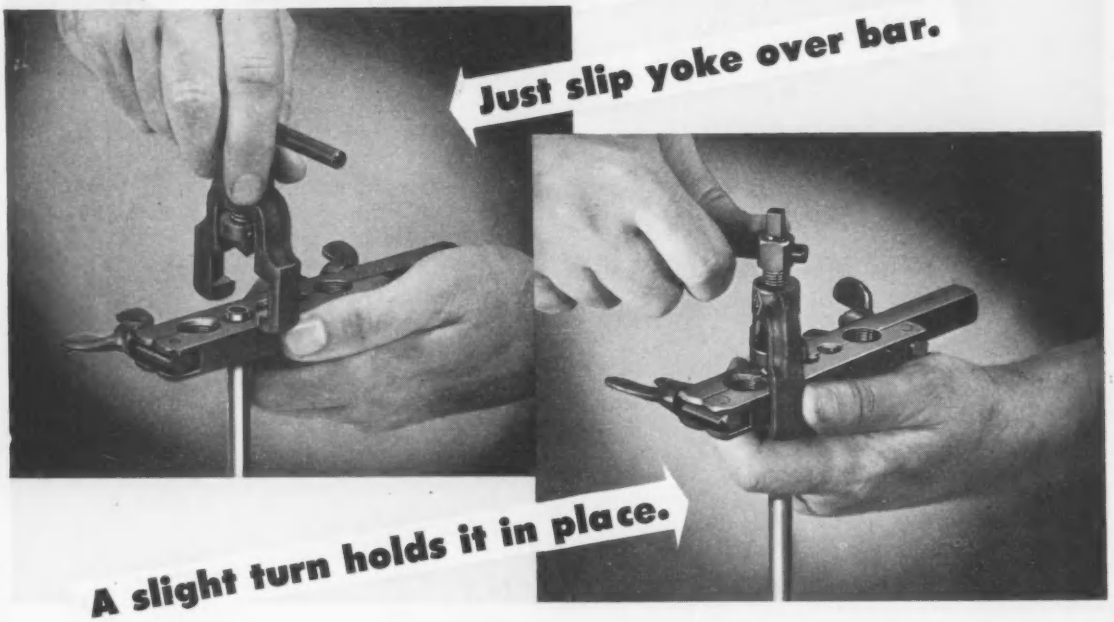

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THE Refrigeration INDUSTRY

VOLUME 1, No. 7 DECEMBER, 1944

The Refrigeration Industry

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THE COVER . . . Housewives are heading towards the frozen food cabinets as never before—which means more business for the food merchant; and it means more business for the refrigeration man (see page 24). Photo for The Refrigeration Industry by Rebman.

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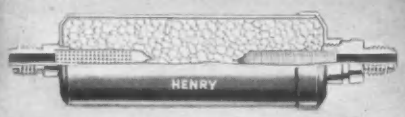
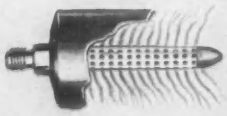


Cross section of Type 743 Henry Dehydrator.



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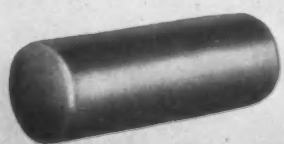

One Piece Drawn Brass Shell. Type 743 Dehydrators in the 6" length are drawn in dies so that they have only one joint—larger sizes have soldered end caps at both ends.

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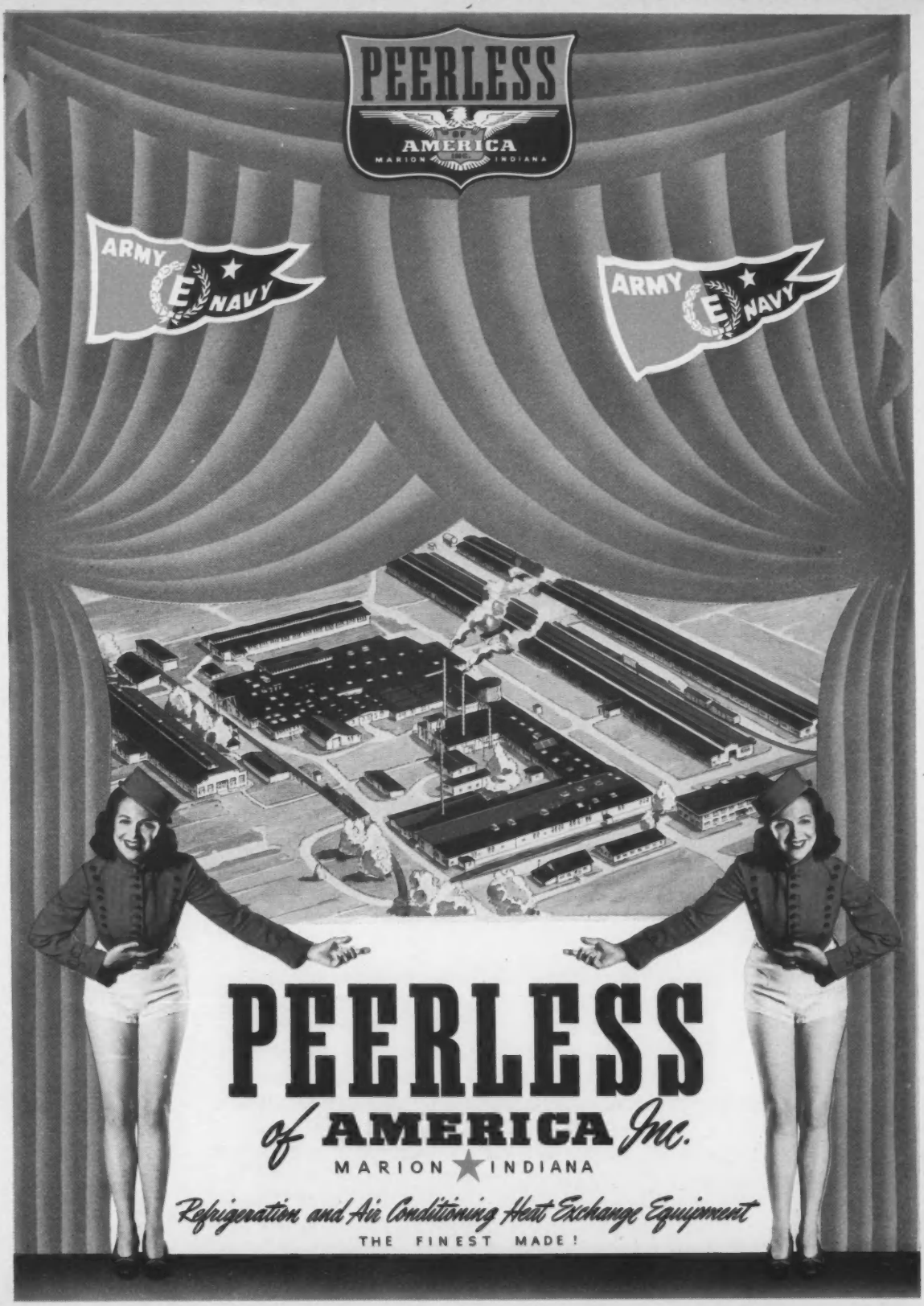
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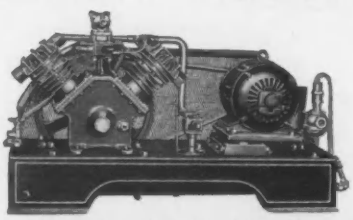

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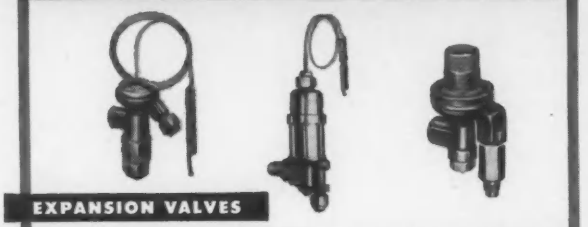

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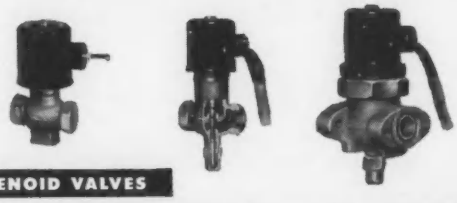
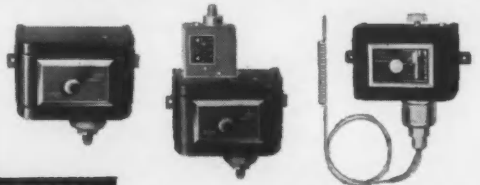


SOLENOID VALVES



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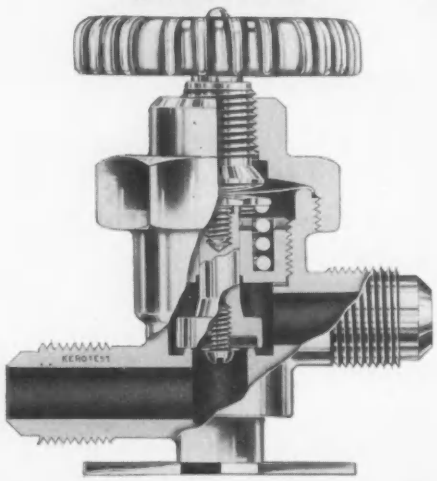

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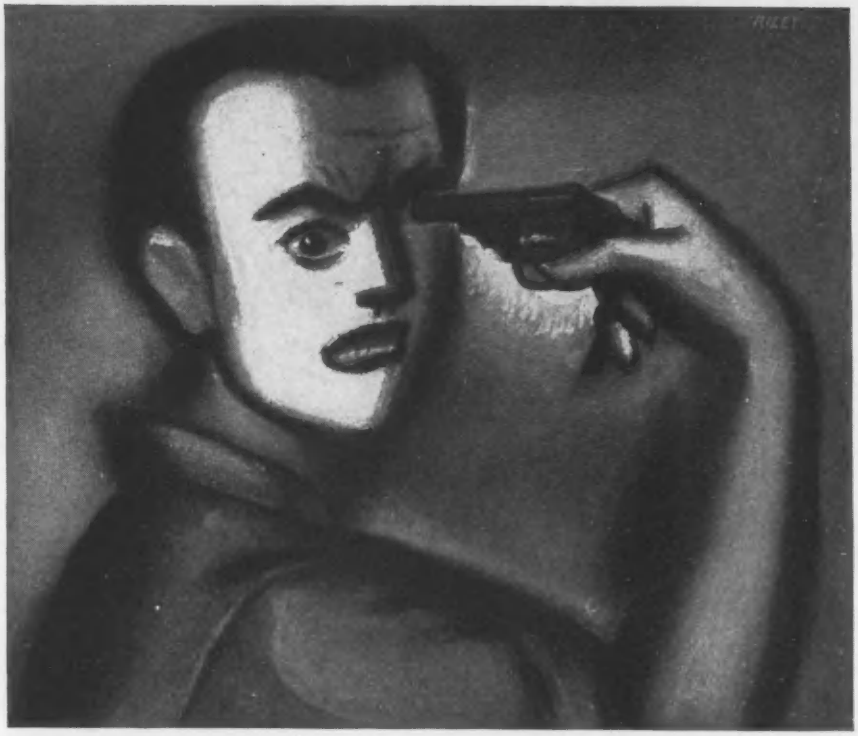

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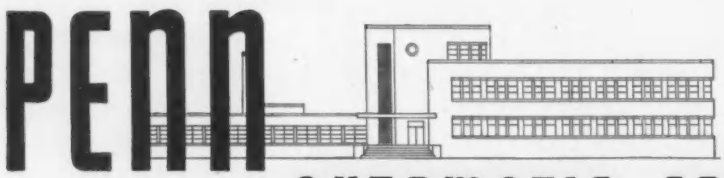

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BTU News • Laws • Trends

PENT-UP DEMAND

IF CIVILIAN production, choked off since early 1942, had been maintained at 1941 levels, U. S. manufacturers would have turned out 10,500,000 refrigerators by the beginning of last October, OPA reports.

Production in other lines would have included 10,900,000 automobiles, 41,100,000 radios, 14,010,000 stoves and ranges, 10,400,000 furnaces and heaters, and 6,042,000 electric washers.

FACTS AND FIGURES

DURING 1940—the latest year not seriously affected by war conditions—the refrigeration and air conditioning industry shipped 302,043 units of commercial refrigeration unitary equipment, with a value of more than 66 million dollars, according to statistics compiled from reports by 295 manufacturers to the War Production Board.

In addition, the industry sold separately 165,758 enclosures for refrigeration equipment, valued at about 12 million dollars. Shipments of air conditioning equipment during 1940 totaled 36,753 with a value of over 9 million dollars. Included in 1940 equipment shipments were 338,666 condensing units, 106,950 of which were produced by companies making the unitary equipment.

Over 17 million dollars of heat exchange equipment—liquid coolers, fin coils, plate type evaporators, evaporative condensers and unit coolers—were sold during that year.

In terms of number, most important type of commercial unitary equipment was the beverage cooler, 78,397 of which were shipped in 1940. Ice cream cabinets were second with 74,281 units. Drinking water coolers, display cases, reach-in refrigerators, and beverage dispensers follow in that order.

In terms of dollar value, display cases were first with a value of more than 16 million dollars. Ice cream cabinets, with shipments of $11,939,700, and beverage coolers, with $11,253,728, were next in importance.

Commercial condensing unit shipments outside the industry totaled 228,684 units, and shipments of compressors and compressor units outside the industry amounted to 54,240.

Of the total unitary equipment shipments, 221,321 were self-contained and 80,722 were remote.

"SPOT" OK'S

AT LEAST two manufacturers— Emil Steinhorst & Sons and Gibson Refrigerator Co.—have been given the green light for limited production under WPB's "spot authorization" procedure.

Steinhorst's authorization will be used to get materials and components for manufacture of milk coolers, while Gibson's okay covers experimenting and building models of commercial and domestic refrigerators, it is reported.

A.S.R.E. MEETING

AMONG interesting technical sessions planned for the fortieth annual meeting of American Society of Refrigerating Engineers at Hotel Pennsylvania, New York City, December 10 to 13, is one on quick-freezing and storage, both commercial and household.

At this session, set for the afternoon of December 12, Dr. D. K. Tressler, General Electric Co., will discuss "Home Freezers"; Prof. J. E. Nicholas, Penn State College, will describe "Quick Freezing Performance of an Experimental Sub-Zero Food Freezer," and Richard C. Poole, General Foods Corp., will outline "The Future of Commercial Freezing."

Other papers scheduled for presentation at the meeting include:

"The History of Refrigeration," by Harry Sloan, Vilter Mfg. Co.; "Differential Temperature Expansion Valves," by F. Y. Carter, Detroit Lubricator Co.; "Control of Evaporative Pressures," by W. A. Grant, Carrier Corp.; and "Refrigeration for Penicillin Manufacture," by C. F. Holske, Vilter Mfg. Co.

LOW-TEMP NEEDS

MINIMUM essential requirements for 25,000 frozen foods storage boxes and 20,000 ice cream cabinets in the restaurant industry during 1945 were reported to War Production Board officials recently by members of the restaurant industry advisory committee. These units were included in a list of 195 restaurant equipment items for which high demands are indicated.

MILK COOLERS

CONTROLS over the production of refrigerated farm milk coolers have been transferred from Order L-257 (farm machinery) to Order L-38, through amendment of the farm machinery order and issuance of Direction 2 to L-38. According to WPB, the move was made chiefly for purposes of simplification.

Farmers can now procure a refrigerated milk cooler by signing a certificate of vocation with their dealer, and a statement that the cooler is to be used to cool milk for sale through wholesale or retail sources. The certificate replaces both WPB-1319, formerly required, and the rationing certificate that farmers formerly obtained from their County War Boards.

However, rationing certificates obtained before WFA rationing orders were revoked may still be used where the farmer has been unable to get the equipment covered

Continued on page 31

Assisted by two Detroit Co-op men, a new condensing unit starts on its way to "work." Five trucks cover the company's territory.

THEY PROFIT MOST...WHO SERVE BEST

Here's how one refrigeration servicing organization is developing its post-war sales punch

Here are the "partners" in one of their regular general meetings, held quarterly. Executive members, who meet once a month, come up for election once a year.

EVEN if it weren't just about the most natural thing in the world for a refrigeration installation and servicing organization to branch out into sales work—the materials situation permitting, of course—it's something you'd expect an outfit like Detroit Cooperative Refrigeration Service to do.

For this unusual—and highly successful—organization, which celebrated its third business birthday only last November 24, has been following a pioneering course ever since its formation. So it's only a comparatively small step from service to sales for the seventeen "partners" in this enterprise—and if dealership values, like odds on race horses, are figured on past performance, it would be a mighty sweet bet for any distributor or manufacturer.

Service men repair a household unit in a corner of Co-op's well-equipped shop.

To ready itself for post-war merchandising, Detroit Co-op only recently moved from its original location to new and larger space at the corner of Grandy and East Forest on the city's east side. In addition to complete shop facilities, ample display space is afforded in the new quarters—and commercial cases and coolers are already on display.

As soon as equipment is again to be had, lines of household refrigerators and air conditioners will be added, and the organization will be ready for the big sales push.

Who'll do the selling? The company's present servicing organization—for after all, haven't these same men been selling service during all the period when new equipment hasn't been available? In the opinion of Cyril H. "Cy" Young, president of the Co-op organization, a wide-awake service man with an eye to sales can easily match the efforts of an out-and-out salesmen, if he's given the proper incentive. And the incentive is there, for Detroit Co-op members—because they profit in direct proportion to the effort they put into the business.

Time to Start

For the full story of this unusual organization and how it operates, let's go back to that day in November, 1941, when four of the five "charter" members—Cy Young, J. Kermit Smith, Frank Snay, and Roland Disler—decided to start out in business for themselves. All of them had been doing installation and service work for a local distributor—and with war industry growing and shortages of new equipment in the offing, they figured it would be a good time to start a servicing organization of their own. And if they were to pool their knowl-

edge, tools, and money, and were willing to share equally in the profits, they would all benefit as individuals.

So it was decided to set up the organization along truly cooperative lines, and a refrigeration contractors' license was obtained and Detroit Cooperative Refrigeration Service opened for business on December 1.

Later, Charles J. Purdie, Jr. joined the organization as a special charter member, and Frank Snay left the group. Today the charter members hold the following positions in the company: Cy Young is president; Roland Disler has charge of all installation work; Kermit Smith is service supervisor on the east side, and Charles Purdie on the west side.

At present there are seventeen members in the organization, including two who are now on leave in the armed forces. And despite the overall shortage of refrigeration mechanics, manpower hasn't been a problem; on the contrary, the problem here has been to select "partners" in the organization from the individuals who seek membership in it.

For nobody is "hired" by this organization—they're all partners in the firm, and share in its profits according to the grade of membership they hold. This goes for the president as well as for the secretary-bookkeeper in the front office.

Membership Setup

Ordinarily, the newcomer in the organization comes in as a "trial" member for a period of three months, at the end of which period he is either rejected or elected a junior member of the group. Under the co-op plan, trial members receive a salary, plus 25 per cent of the "profit hour".

After election to "junior" membership, the individual receives his salary plus 50 per cent of the "profit hour". He also qualifies as a permanent member of the organization, and can be discharged only if the executive board votes him guilty of an infraction of the by-laws. This same provision applies to all higher grades of membership as well. If separated from membership, the men are paid their profit and shares before being discharged. Junior members may be promoted to "senior" standing upon recommendation of an executive member of the group.

Senior members, who share in 75 per cent of the profit hour, can be elected executive members upon completion of a three-month trial period to test their fitness for such an office.

To be an executive member, an individual must hold one of the executive offices in the organization. Executive members receive 100 per cent of the profit hour. Officers are elected at the annual meeting in February, and take office on March 1.

Charter members, who may or may not be executive members, also draw 100 per cent of the profit hour, and in a crisis are empowered to act over the heads of the executive board when the good of the organization as a whole is at stake.

Provision is also made for part-time members—any member working less than forty hours per week. Such members are considered "trial" members, and share in profits on that basis, until they have completed the equivalent of three months at full time. From there on, they are graded up in the same manner as are other members.

To get into the organization as a trial member, all that is required of the individual is honesty, aggressiveness, and the desire to get ahead, Cy

Continued on page 44

President "Cy" Young takes a daily time and sales record of one service man's activity.

Preview of Co-op's post-war sales room. Household units will join the cases shown.

Your Stake In

Planning to risk those War Bonds in Air Conditioning, Mister? There are plenty of Profit Possibilities, this writer contends, if the industry remembers one little detail. What do you think it is?

By F. O. Jordan

WHAT business possibilities does post-war air conditioning offer me?

That's a fair question—one that has been asked of me by so many refrigeration people in the past few weeks it's probably safe to assume that there must be considerable interest in the answer.

Perhaps you, in formulating your plans for post-war ventures, are wondering about the answer yourself. Would it be wise to risk those war bonds on the air conditioning business, the business whose aim is to provide an oasis of cool comfort in the great American desert of conventional summer heat? Or would it be cheaper in the end just to go play the horses?

What Statistics Show

Statistics will show that some money was made on air conditioning before the war. The record also shows that plenty of money was lost on the summer comfort business. Probably no infant industry was ever touted so highly as a coming industrial giant.

Something must have s l i p p e d somewhere. People liked to be comfortable in spite of intolerable combinations of temperatures and humidity, even before the war. They did their best to prove their liking in the way they thronged the air conditioned theatres when the heat was on. Yet they refused to buy air conditioning and be comfortable right at home. Funny, wasn't it?

The fellows who had bet their money on air conditioning as a means of livelihood didn't think it was funny. Of course, they often did fairly well selling their wares to the restaurant, theatre, or other commercial establishment. So this end of the air conditioning business made a fair-sized industry, just like the commercial end of the automobile business. But it was only a drop in the bucket compared with the tremendous volume that was hoped for and would have been realized if every family with a private auto could have been induced to buy summer comfort for its home.

Is Each Job A Special Problem?

We all know the story, the one about how every air conditioning installation, regardless of size, is a special problem demanding a complete analysis, special engineering, and an environmental condition of ideal comfort in all parts of the building twenty-four hours a day. The result was a first cost about twice the price of the family car with deluxe equipment, and an operating cost something like keeping a private battleship.

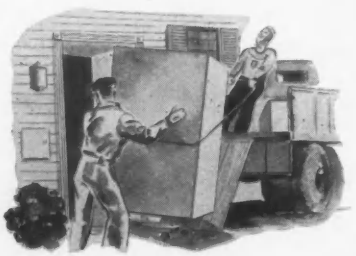
What business possibilities does post-war air conditioning offer me? The answer is easy. It offers very little more than it did before the war—unless one little detail is taken care of: *The cost of residential air conditioning must be pegged low enough to be reached with the same pocketbook that can buy and maintain one of the popular priced cars.* Air conditioning has to be priced so the man with the conventional, well-built, insulated six or seven room home can get an all-year air conditioning installation for no more than $1,000 to $1,200 installed.

The writer made an experimental installation for a residence in this class before the war. It included automatic gas heat, mechanical refrigeration, ducts, controls, and all the rest of it. The contractor's cost, including cartage, labor, overhead, a year's service reserve, etc. was *less than $800.* It could have been sold at a very nice profit for $1,200. The first summer after this installation was made, we had a week when the temperature was above 100° in the shade every day—"hot spell" in any man's language. The temperature in the living room never rose above 83° F. at any time. Any lower inside temperature would have been too cool for such weather.

Good Planning Brings Business

Yes, there are some tricks to this installation. They are the kind of tricks it is going to take to make post-war air conditioning a good business to be in.

In the first place, we don't try to cool off the entire house at the same time—it isn't necessary, because you don't occupy the daytime, or living zone, and the nighttime, or slumber, department, simultaneously. Our system schedules its efforts accordingly and so cuts down on expenses considerably.

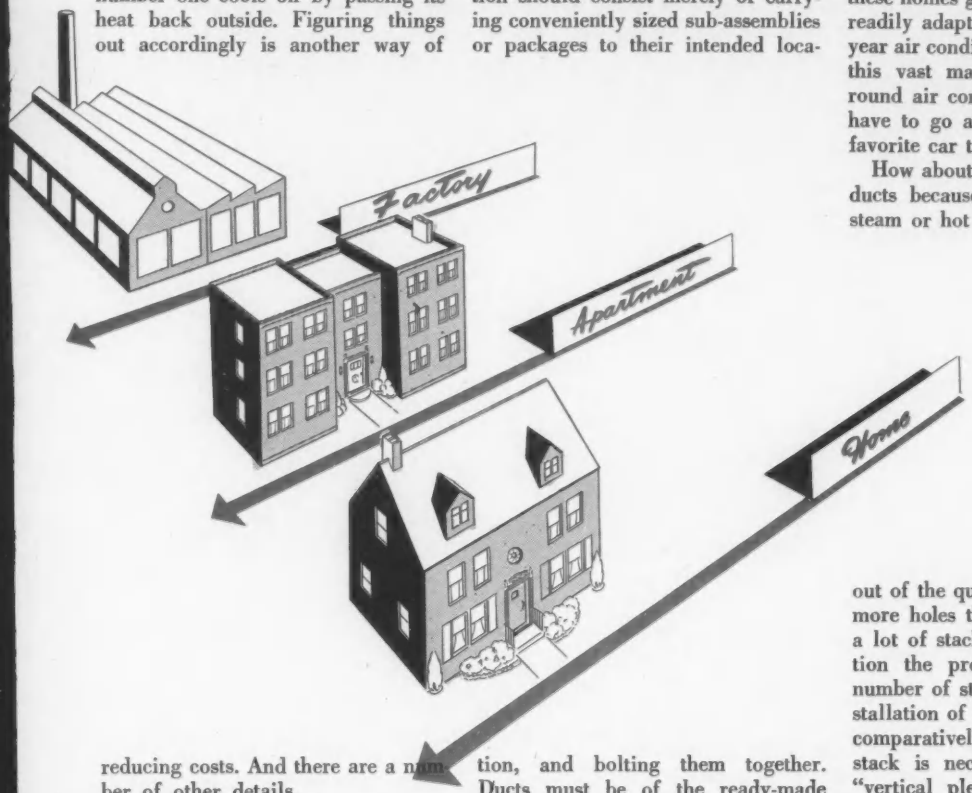


And another thing. Our system is controlled so it doesn't let a lot of heat accumulate in the materials the house is made of. It gets a lead on the weather by going to work as soon as it starts to get warm *outside.*

Then there is apparent movement of the sun. It doesn't shine on the same exposure of your home all day. It shines on one wall for a while

Air Conditioning

and then moves over a little and warms up another part while wall number one cools off by passing its heat back outside. Figuring things out accordingly is another way of reducing costs. And there are a number of other details.



Of course, residential air conditioning cannot stand the cost of exhaustive surveys and extensive engineering analyses. It isn't like the million-dollar theatre job that can stand quite a burden of overhead and still be a good investment. Field engineering has to be boiled down to where it is a matter of opening the little book to page three to see what model number is good for such and such a size of a so and so constructed house in the locality of St. Cinciapolis. Duct sizes to the various exposures have to be figured in some simple way such as multiplying room size and exposure by a factor. After installation is made, air distribution has to be equalized by adjusting the dampers anyway, no matter how much time is spent in engineering calculations.

Installation must be facilitated in every possible way also. Insofar as the equipment is concerned, installation should consist merely of carrying conveniently sized sub-assemblies or packages to their intended location, and bolting them together. Ducts must be of the ready-made knock-down type, of which several good varieties were on the market before the war.

Residential Business is Here

Residential air conditioning has just about arrived. War-time necessity for uninterrupted production and perfection of certain vital products have demanded air conditioning on a scale never before dreamed. Great numbers of people have grown accustomed to working in comfort regardless of torrid summer weather, or they have listened in envy to tales of its wonders. Offer these air conditioning-minded people all-year comfort at the price they pay for their car and they will be wanting it for their summer cottages, too.

Nor should air conditioning be restricted to new construction. There are millions of home owners that need new furnaces, or want improved ones. The duct systems in these homes generally are adapted or readily adaptable to use with an all-year air conditioner. The majority of this vast market will buy a year-round air conditioner if they do not have to go above the price of their favorite car to get it.

How about the homes that have no ducts because they are heated with steam or hot water? Obviously, it is out of the question to cut a dozen or more holes through all floors to get a lot of stacks through, not to mention the problem of concealing a number of stacks. Of course, the installation of only one stack would be comparatively simple. Well, only one stack is necessary. We call it the "vertical plenum chamber system," and it is not a bad idea for new homes, too.

The gist of the story is that every home in the U. S. A. that sports a car and an electric refrigerator, and all such homes to be constructed, forms the post-war residential all-year air conditioner market, if approached in the manner we have been attempting to describe.

What Are Some Other Markets?

So far we have been talking about the residential air conditioning market and how to tap its tremendous potentialities. There are some other air conditioning markets big enough to be worthy of investigation. Did you ever live in one of those sunny little apartments where the temperature never goes below 100 or thereabouts between May and September?

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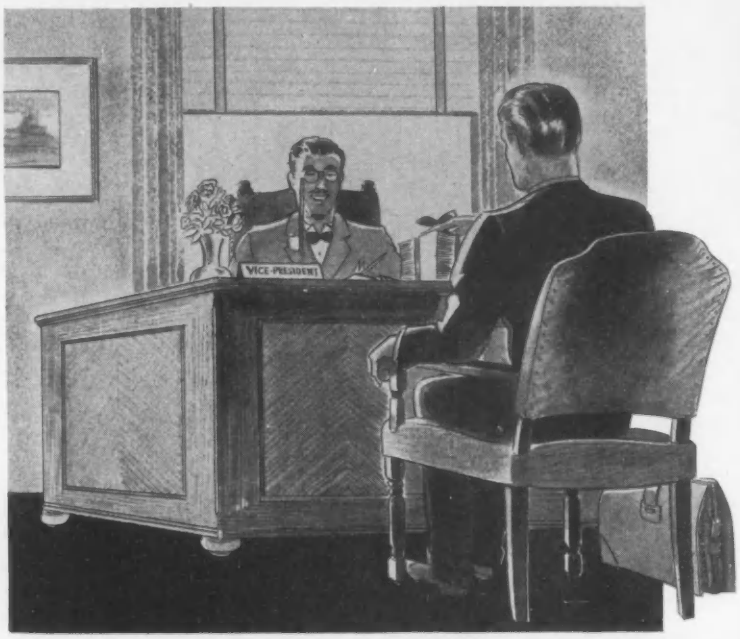
PLAN YOUR POST-WAR FINANCING NOW

Here's "must" reading for every refrigeration man who expects to expand his activities—(and who does not?)—when peace comes

By Fred Merish



Now's the time to go over your financial structure preparatory to seeking credit to expand post-war.

REFRIGERATION dealers and maintenance men are certain to invest a tremendous sum in post-war promotion, modernization and expansion—and it won't be c. o. d. business. The major portion of these transactions will be financed in some way. Those extending credit accomodations will want to see financial statements, so it will pay you to give thought now to what your financial standing will be when the time comes to make these investments.

Wise businessmen in all fields are anticipating their financial position at war's end by issuing "crash" balance sheets, a new accounting instrument born of our war economy and designed to appraise financial standing when they sound the last "all-clear." Obviously, there will be more or less water on many balance sheets at that time, unless it is pumped out now. If you don't do it, the credit granter or banker will do this job when you ask for post-war credit, and only then may you learn that you must curtail your plans sharply because your financial position is not what it seemed.

There will be more or less water on many balance sheets when expansion comes, unless it's pumped out now.

Distortions created by our war economy, wartime rulings, manpower and materials shortages, high taxation and high national income, which may fall off after the war, are certain to necessitate a re-valuation of the net worth on many financial statements. The dollar in your pocket hasn't the exchange value of prewar days; and your net worth, which is listed at so many paper dollars, is likewise affected.

It is a common mistake to vision the net worth on your balance sheet as a possession with a fixed value, when it is actually only a paper figure, changing with the economic tide, that requires regular adjustment to current value after all factors influencing it are considered. Your financial standing should be periodically appraised, so that you do not reach the postwar period with the equivalent of "baloney" money on the report you offer those who stand ready to underwrite your post-war program.

Most refrigeration men analyze their financial statements once a year. Some never analyze them, retaining net worth "as is," crediting or debiting it with profit or loss as shown on their books. In pre-war days, a long-term checkover of balance sheet itmes may have sufficed. Today, the ratios and percentages between items on the financial statement should be checked at least quarterly. Keep all items at a conservative figure, assets, liabilities, reserves and net worth. There will be plenty of demand for goods and services, and those with conservative balance sheets will get paramount consideration.

Continued on page 22

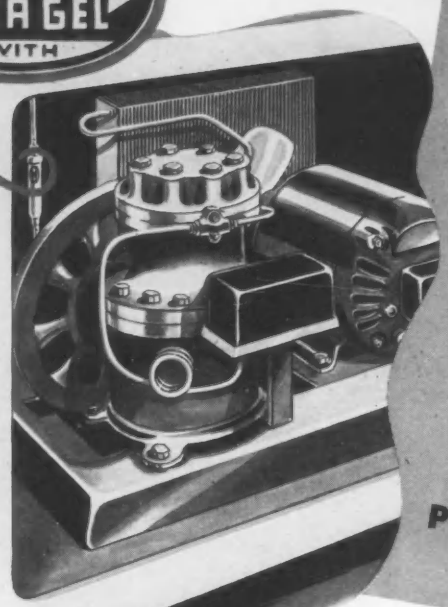
CHARGED DAVISON'S IN SILICA GEL OUT WITH

IN CHARGED DEHYDRATORS ... IN BULK FOR REFILL...

DAVISON'S SILICA GEL GIVES YOU

Greater Value

PER POUND!



The amazing pore-surface and volume of Davison's Silica Gel is fully and effectively exposed to the refrigerant at all times. Moisture, acids, corrosive compounds are removed instantly on contact. Processed especially for the dehydration of refrigerants, Davison's Silica Gel will not cake nor powder, prevents channelling of the refrigerant, is chemically inert and non-reactive to metals or alloys. Effective on Freon, Methyl Chloride, Sulfur Dioxide, and other types of refrigerator systems.

For the 100% dryer efficiency that will make your business more profitable . . . help your reputation as a good service man . . . always specify *Davison's Silica Gel* from your jobber.

CURTIS BAY WORKS

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON'S SILICA GEL: CANADIAN INDUSTRIES LIMITED, General Chemicals Division

Not only should every dealer and repairman record balance sheet items conservatively, but he should be able to analyze his balance sheet figures intelligently in order to determine trends of income, costs, tendencies toward over-expansion, overtrading, and other factors that influence the granting of credit and financial stability.

These suggestions will help you.

Current assets: Cash, accounts and loan receivable, inventory. The ratio of current assets to current liabilities, called the current ratio, is of prime importance. In pre-war years, a 2 to 1 ratio, $2 in current assets to $1 in current liability, was considered satisfactory. Today, a 3 to 1 ratio or better is desirable. Remember, you must reach war's end with ample funds to handle the outlays for sales promotion, modernization, expansion and rehabilitation, so there will be a heavy drain on your working capital at that time.

Working capital, the difference between the current assets and the current liabilities, is seldom all in cash. A part of it is in inventory, receivables, and other assets of quick liquidity.

Often, the lack of working capital isn't noticed until sales take a nosedive or credit is restricted. Refrigeration men who are doing a big volume now may get themselves into a foxhole if volume drops in subsequent years. Repair sales may drop from war-highs when there is a rush to buy new refrigerators after the war, and those doing only repair work may feel the pinch.

On the other hand, where the war has curtailed volume, the heavy postwar demand for units may require considerable working capital, so that dealers must be adequately prepared.

Fixed Assets: Equipment, fixtures, buildings and trucks. Compare fixed assets to net worth. If fixed assets are greater, this indicates that you are unable to operate without some borrowed money, in order to obtain working capital. To operate profitably, there must be a reasonable margin between net worth and fixed assets. Otherwise, yearly expense becomes top-heavy with charges for depreciation and upkeep.

Net worth should always be more than fixed assets. Some dealers and repairmen take pride in a heavy fixed asset valuation, but credit men and bankers are more concerned with the debt-paying ability of a credit-seeker. A good current asset position is more to their liking, because it indicates that the money is there to pay.

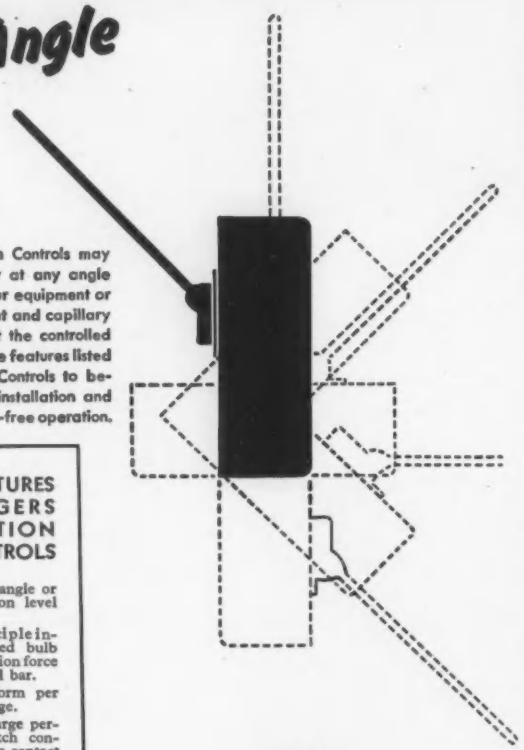
Current liabilities: Accounts payable, loans payable due in one year or less, accrued items, such as payroll, interest and taxes. Some refrigeration men fail to accrue items of this type, which inflates the net net worth. Pro-rate accrued expenses to the date of the balance sheet.

Be sure to accrue taxes. Many enter their taxes only when paid. Pro-rate this expense monthly, so that any month a balance sheet is prepared, the proper liability is recorded. Taxes are now so high that the omission of this liability may make a substantial difference in your net worth.

Watch loans payable to see that they are paid promptly. If renewed continually, it indicates that the businessman considers current loans as fixed or long-term obligations and should payment be demanded, embarassment may follow. Use current loans only to settle current obligations. It is usually bad policy to bor-

Continued on page 47

You Can Mount WR Controls At Any Angle



White-Rodgers Hydraulic-Action Controls may be mounted in any position or at any angle convenient to the design of your equipment or installation. The flexible element and capillary may be bent or adjusted to fit the controlled area. These advantages plus the features listed below enable White-Rodgers Controls to become an integral part of any installation and assure years of accurate, trouble-free operation.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action Principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

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Controls for Refrigeration • Heating • Air-Conditioning

STRAINERS and FILTERS

FOR EVERY NEED

Mueller Brass Co. Strainers and Filters are manufactured throughout with non-ferrous metal, and have a polished natural metal finish. All tubular types are fabricated from brass or copper pipe with forged brass outlets soldered in place. Other types are made from brass forgings.

All Filters and Strainers are designed to insure efficient passage for the maximum refrigerant volume that is generally used in any particular size refrigerant line. The range is exceptionally complete — one for every specific purpose.

Write for literature on A-13661 Line Filter — inexpensive and with a maximum efficiency.

Order through your jobber.

MUELLER BRASS CO.

PORT HURON, MICHIGAN

By Hiram K. Smith
Associate Editor
THE REFRIGERATION INDUSTRY

GROCERY LIST

Bread
Roast - Bacon
Eggs - Cheese
Potatoes
Lettuce
Frozen Food
Sugar

Look at the

BACK in 1930—first year of commercially-packed quick-frozen food retailing—only 80,000 pounds were sold. In 1944, according to a leading authority, despite wartime restrictions on new equipment, shortages of labor, shipping and low-temperature storage space, the industry packed a half billion pounds — over 6,000 times the first year's volume!

It is no secret in the trade that freezer storage and retail dispensing equipment has been barely adequate to handle the volume of the last few years, let alone a continually increasing pack.

So, to the refrigeration man, expanding sales of quick-frozen food means increased demand for sales, installation and servicing of low-temperature storage and dispensing equipment for retail stores. It means, in addition, much new construction of freezer storage rooms and conversion of present cold-storage space to freezer storage.

Some new retail cabinets (top) are open for self-service. There's increased refrigeration business in construction of modern freezer storage rooms (left) for restaurants, stores.

Phenomenal is the word for the increase in sales of frozen foods during the past five years. Storage holdings of quick-frozen fruits September 1 this year were 62.2 million pounds greater than in 1943, vegetables 20.2 million pounds greater. And these figures do not take into consideration millions of pounds of frozen meats.

A comparison of September 1 holdings in public storage facilities (not locker plants) of 1944 with previous

	Fruits	*Vegetables*
5 year average 1935-1939	119,074,000	
September 1, 1939	143,057,000	71,639,000
September 1, 1940	163,043,000	76,813,000
5 year average 1939-1943	182,867,000	94,108,000
September 1, 1943	184,763,000	134,162,000
September 1, 1944	246,939,000	164,383,000

Everyone seems agreed that quick-freezing is due for a sky-high boom. Who will buy, who will sell, and what's the refrigeration man's approach to this market? This article, first of a series, filters some of the rumors, guesses, fiction, points to some startling facts and figures

Most existing cabinets are of the covered type shown above, adequate for small stores whose customers are frozen food conscious.

years will give a good idea of how matters stand today.

Of last year's pack, 4 of 10 packages went to the armed forces, largely in camps in the U.S.; 60 per cent went into civilian consumption. This year, as our troops move into areas where refrigeration is not available, about 85 per cent will go to civilians.

The fact of the matter seems to be that the public will buy just about all the quick-frozen foods offered for sale, and selling frozen foods means boosted income for food merchants.

Today's retail volume, according to one food chain, is best expressed by comparing purchases in their retail stores for January, February, and

Business!

March, 1944 with a corresponding period in 1939.

In 1939 these stores did a monthly average quick-frozen food business of $188.00 for the three-month period. The same stores, in 1944, showed a volume of $446.00—an increase of 137.2 per cent in five years! Projecting these figures into next year, this firm expects a further increase to an average volume of $497.00 per store per month.

From large low-temperature cabinets from which lids have been removed to adapt them for self-service and increased volume, one Philadelphia chain is selling 12,000 to 15,000 packages of quick-frozen foods for a gross of $3,000 weekly. With an estimated 4 per cent of this company's total business now in frozen foods, they plan, post-war, larger central

warehouse freezer space and freezer storage rooms in each store, besides additional dispensing cabinets.

Increased consumer acceptance of quick-frozen foods and a picture of the gigantic potential retail market is all very well, you may say, but just how do I get some of the refrigeration business it involves?

The advertising and merchandising magazine *Printer's Ink* answered that question almost a year ago when it said: "Competition for dealer outlets will be tougher than the battle for the nod from the consumer."

Translated into terms of our industry, this means simply that many manufacturers in the trade, both old and new, actively are searching for alert, merchandising-minded refrigeration firms who will make good outlets. Refrigeration men with an eye to the future will do well to consider their own place in the picture.

For the truth is that refrigeration

Size of equipment naturally varies with size of store and its frozen food volume. These cabinets are in a large super market.

men are in a peculiarly advantageous position to get a lion's share of this vast low-temperature business. Why? Because it's the most natural thing in the world for a merchant to ask his refrigeration man's advice when purchase of new equipment is contemplated. The man who sold, installed and services a food store's present refrigeration logically is on the inside when expansion is planned.

Specify Proper Equipment

Frozen foods must be stored at constant zero or below, yet the trend in retail dispensing cabinet design is clearly towards open-top cabinets which provide quick access for self-service. Except during rush-hours, packages are kept below frost line.

Since food men are in the food not the refrigeration business, and since each retail store's needs are different from another's, it is up to the refrigeration man who enjoys his local merchant's confidence to recommend the proper equipment needed.

The small neighborhood store, for example, will use a cabinet of different size and probably of different type than the large market, while the super market will want big, elaborate dispensing cabinets, storage cabinets and a freezer storage room.

The W.P.B. Report

In a report to the War Production Board, the Task Committee on Commercial Frozen Food Storage and Dispensing Cabinets cites a census figure showing 393,610 food stores in the U.S. Graphically, the report lists an estimated 38,000 frozen food cabinets and 60,000 converted ice cream cabinets in use, recommends that manufacture of 17,000 commercial food storage and dispensing cabinets of approximately 20 cu. ft. capacity be authorized as follows: third and fourth quarters of 1944—7,000; first and second quarters of 1945—10,000. Which leaves a total of 178,610 cabinets required to allow each food store one cabinet. Of course every single store in the U.S. will not want or need a frozen food dispensing or storage cabinet but, even heavily discounted, the market is tremendous.

War-time population dislocations distort the figures on present need for additional low-temperature retail equipment. But some idea can be gained from a glance at a typical city.

San Diego has had a 40 per cent population increase—from 200,000 to about 310,000. Pre-war the city had 160 frozen food cabinets in retail stores, or one for every 1268 people. Dividing the increased population by 1268 gives a total of 86 new cabinets needed in retail stores *in order to have pre-war coverage*. But the demand for frozen foods has *increased* during the past four years. Hence the figure of 86 new cabinets needed probably is a safe estimate.

In the early days of the quick-frozen food retail business, distribution of some cabinets was handled by packers and food distributors, both on a lease and outright sale basis.

Canvass Your Customer List

Today, however, as more and more refrigeration men make plans for post-war retail refrigeration business, is the time to canvass your local market, line up the low-temperature business you should be handling. By applying the formula used to arrive at the San Diego figures, for example, it is possible to determine your own potential sales market. Go over your service and customer lists, explain to your prospects the advantages of handling quick-frozen foods; if they already have equipment, propose new and additional storage and dispensing units. The field's wide open.

Intelligently to sell the dispensing cabinets, storage boxes, the new freezer space, refrigeration men will find of interest a brief glance at the background of the frozen food business.

General Foods Corporation went into Springfield, Mass., fifteen years ago, to conduct a marketing test on a new product: Birds Eye Frosted Foods. What they had to sell was the latest wrinkle in food preservation—a quick-freezing method developed by Clarence Birdseye which halted enzymic and microbic action and forced temperatures down so fast that color- and flavor-destroying ice crystals didn't get a chance to form.

General Food's distribution subsidiary, Frosted Foods Sales Corporation, quietly installed special low-temperature cabinets in ten Springfield stores, stocked them with a test line of quick-frozen meats. By year's end more than 100,000 sales had been made, repeat business averaged 75 per cent, Birds Eye outlets totaled fifty and the line had been supplemented by sixty new quick-frozen items, including fruits, vegetables, meats and seafoods.

At End of First Decade

Ten years later Birds Eye was only one of hundreds of big and little brands on the market, and every canner and packer in the nation was watching with apprehensive or anticipatory eyes the unbelievable development of this new industry. In 1939 450 million pounds of quick-frozen foods were sold, representing $100 million in retail sales, and experts were predicting the day when sales

Continued on page 36

LOOK AT THE FROZEN FOOD BUSINESS!

I. ***Commercial quick-freezing and retail food sales***
1. What does increased consumption mean to the refrigeration man?
2. What about the market for retail storage and dispensing cabinets? New and converted freezer storage?
3. What's some of the background of the frozen food business?

II. ***The locker plant and the refrigeration man***
1. Who sells, installs, services locker plants?
2. How can the refrigeration man get into the locker plant building field?
3. Are locker plants here to stay? What's their record?

III. ***Home storage and home and farm freezers***
1. Eighty-three per cent of a sample of readers of THE REFRIGERATION INDUSTRY report they're going to retail home freezers post-war. How many manufacturers *are* there?
2. Are the big domestic refrigerator makers going to monopolize the market?
3. Why the refrigeration man enjoys the confidence of his service customers.

You can make

PART II

SEALS PERFORM !

Continuing a practical discussion of a problem which every refrigeration man should understand

By Edward A. Wenk

THE seal face should not be wider than 1/16-inch. The wider it is, the more difficult it will be to make it hold, and the more spring tension will be required. If the face is badly worn, or wide, it must be tapered off until it is less than 1/16-inch but more than 1/32-inch wide. This can be done by chucking a short piece of metal in the lathe and making a mandrel to fit the seal. If the mandrel has a one degree taper, the seal can be pushed on the mandrel with the tail stock of the lathe. If light cuts are taken with a sharp, diamond shaped tool, no trouble should be experienced in keeping the seal on the mandrel.

Seal Faces Are Tough

The metal used in a seal face is usually phosphor bronze, sometimes impregnated with graphite. This metal is tough and stringy, and is not easy to turn. When the lathe has a loose head stock, or is of light construction, chattering is sometimes experienced, which can also be caused by too low a speed or an improperly ground tool. If the seal face is not too wide, or after it has been tapered off as above, it must also be lapped. There are three ways to do this.

The first is by hand, and is difficult to do, but requires no equipment other than a piece of plate glass, or a cast iron lapping block, and some abrasive powder or paper. Abrasive paper is available in a wide range of grains. The "Wet or Dry" type of paper is best to use, as it can be soaked in gasoline. A piece of this paper, stretched on a square of plate glass, makes an ideal lapping block. It will not wear out, and cuts much faster than a cast iron lapping block and powdered abrasive.

Care of Lapping Plates

Cast iron plates wear hollow, and should be bought in pairs and lapped against each other to generate a new surface each time they are used. When plate glass and paper is used, only the paper has to be discarded when the surface becomes glazed. Grain No. 240 to No. 300 paper is good for roughing, grain No. 500 or finer for finishing.

Proficiency in hand lapping comes only with practice. The seal must be held firmly as close to the face as possible, and not permitted to tilt. The motion is not important. Some people are able to generate a flat surface by moving the seal in a straight line, others use a figure eight, and still others a circular pattern. It is necessary to examine the face frequently to see that it does not get too wide, wiping it each time to observe the finish also.

The second method calls for the use of a drill press and a disc driver. A disc driver is a rod of a size to fit into the chucks of the drill press on one end, and drilled on the other end to hold a rubber cylinder. It is one of the most useful tools in a refrigeration shop. Disc drivers cannot be bought and should be made in a variety of sizes. They can be made on a

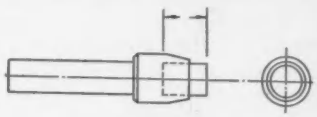


Figure 7.

lathe, out of any kind of scrap rod. Instead of rubber cylinders, rubber corks from ammonia or chlorinated water bottles, can be used. (Fig. 7.)

Another type of disc driver made especially for seals is shown in Fig. 8. This type is even more simple to make. It consists of a stem of the

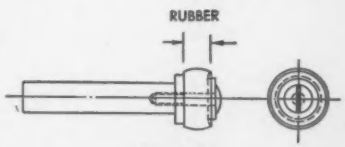


Figure 8.

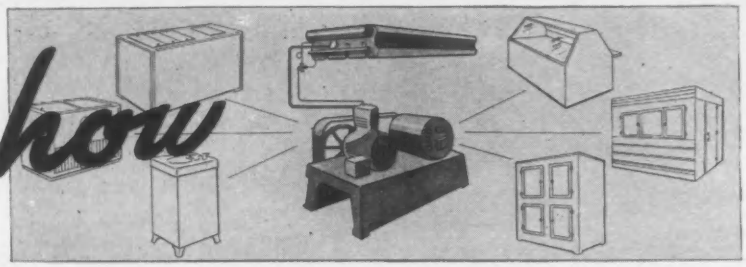
same diameter as Fig. 7. The stem is drilled and tapped on one end. Against this is placed a washer, a thick rubber disc, then a smaller washer, all held together by a screw. Tightening the screw will cause the rubber washer to expand to a fit within the seal bellows or shaft hole.

Put a disc driver of suitable size into the seal and then put the assembly into a drill press chuck. Place a piece of wetted abrasive paper on the table. Make sure that the seal is dry and greaseless or the driver may slip. Hold the paper firmly on the table, start the drill press, and bring the seal into contact with the

Continued on page 32

"Let's share our knowledge—exchange our experiences"

Here's how



THE SERVICE MAN'S DEPARTMENT

For and Against

The post-war woman will be more mechanical-minded. Recognize the fact that women have developed a great deal of interest and knowledge in mechanical operations through driving an automobile, working in war industries, and serving in the armed forces.

The housewife in the post-war period will require a different service-selling approach. The service engineer will have to be prepared to give mechanical information in easily-understood terms. While this may appear to be a disadvantage to some service men, it also has at least one good point. That is that this increased knowledge of mechanical things on the part of the housewife will make her fully aware of the need for preventive maintenance on her refrigerator.

—o—

Milk Cooler Care

In order that your customer may get the longest life out of his milk cabinet, he must follow certain simple rules. Extreme care must be taken by the service man to impress the importance of the need for maintaining a certain routine in properly caring for his equipment.

At least twice a year, the user should drain the tank of all water, clean it, and dry it thoroughly, and check to see whether any rust spots are forming. If rust spots appear, they should be sanded and then painted with aluminum paint.

After the cabinet has been filled with clean water, borax should be dissolved in a small quantity of water and added to the water in the cabinet. An average size cabinet will require approximately 12 pounds of borax at each change.

The user should be cautioned to wipe any water from the condensing unit which may be splashed from the cabinet when milk cans are inserted. They should always close the switch before doing any work on the condensing unit.

The exterior of the cabinet should be wiped and waxed occasionally, and rust spots should be touched up as rapidly as they appear.

Manufacturers' instruction sheets should be placed behind glass in the vicinity of the machine, and all special instructions contained therein should be followed, in addition to the suggestions mentioned above.

—o—

Easy-to-Make Skids

To keep from marring the user's linoleum when moving a refrigerator out from the wall to perform a service operation, the following easy-to-construct skids can be used.

Take two boards approximately two feet long, six inches wide, and seven-eighths inch thick, and wrap them with a piece of rug slightly larger than the board. Lap the rug over the sides of the board and tack it securely on the top four edges only.

Use a rug which has nap on it, as this provides a soft pad to rub along the floor.

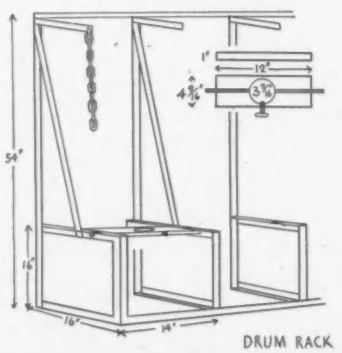
Now, by lifting one side of the refrigerator and kicking the skid under it, then doing the same on the other side, the refrigerator is placed on the skids and can easily be moved without danger of scratching the floor or bending or breaking the refrigerator legs.

Any service man can make a pair of skids like this and save time and floor damage when he moves a refrigerator.

—o—

Drum Rack

Al Weil, of Refrigeration Maintenance Corp., Chicago, sends in the following description of a practical shop fixture, which should be of interest to every refrigeration shop operator:

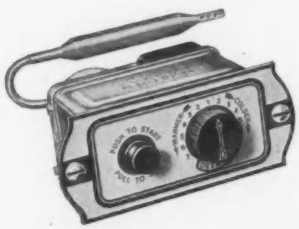


DRUM RACK

"A drum rack, which has been in use for a good number of years, allowing one man to upend large refrigerant cylinders, is easy to construct. A frame of 1" x ⅛" angle iron is used. This should be notched out and bent so that a rectangle is formed which is 4½' long x 14" wide, outside dimensions. Two squares are made, 16" on a side, by notching

This section of
The Refrigeration Industry
is edited by
Warren W. Farr
Refrigeration Maintenance
Corporation, Cleveland, Ohio

"My! What a popular fellow"



WHAT is the secret of Service Man Joe's Success? Why, Ranco Refrigerator Controls, of course! How do they contribute to his popularity? In this way:

Customers appreciate a Ranco installation. That is because Ranco Controls are eye-catching instruments . . . beautifully designed and sturdily constructed with stainless steel side covers, top frames and bases. They are dependable and accurate . . . precision made for long, satisfying service.

No wonder service men who install Ranco-Refrigeration Controls are so popular. Are you standardizing with Ranco?

WORK WITH YOUR
RANCO JOBBER

He will gladly advise and counsel with you in the selection of the proper Ranco Control.

Ranco Inc.

COLUMBUS 1, OHIO

and bending angle iron. The large rectangle is placed in an upright position and a 16″ square bolted or welded to each side of the 4½′ sides. At the bottom a piece of angle iron 14″ long is bolted or welded to the front bottom of the frame for rigidity. Side braces and a short 6″ length of angle iron for the holding chain is then mounted, as shown in the sketch. The assembly is bolted to the floor with the large rectangle placed against the wall.

"A collar is made for the refrigerant cylinders. This consists of a rectangle of 1″ x ¼″ band iron bent into shape with outside dimensions of 12″ x 4 9/16″. In the center of this rectangle is welded a round collar of 1″ x ¼″ band iron with a 3 9/16″ inside diameter. Two ½″ steel rods, 5¼″ long, are each threaded on one end, inserted through a hole in the center of each of the 4 9/16″ sides of the rectangle and threaded into the side of the round collar. They are then to be welded into position at the collar and the points where they pass through the rectangle. A hole is drilled in the center of one 12″ side of the rectangle, threaded, and a ½″ diameter bolt inserted for locking purposes. Two pieces of 1″ "U" channel iron, 1″ long, are to be cut, and bolted or welded to the top of the base frame with the open edges pointing upwards, and located a distance of 1″ from the front edge on either side.

"The refrigerant cylinder then has the collar slipped over it and tightened on with the locking bolt. The cylinder is then laid down with the steel rod on either side of the collar resting in two pieces of "U" channel. Lifting to an inverted vertical position is then easy through the swivel action. A light locking chain goes around the cylinder and is pegged on one side.

"This rack may be built in multiples of two, three, four, or more cylinder spaces for the different types of gases. The swivel action permits easy drum inversion, and allows the cylinder to be handled without strain by one workman."

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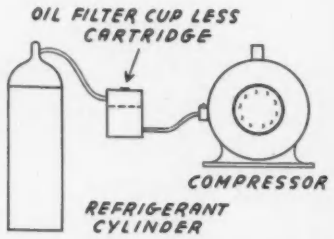
Time Saver

Certain types of rotary compressors will stop pumping when for various reasons their oil supply becomes low. Instead of the messy job of disconnecting and blowing off refrigerant, Howard M. Rink, Philadelphia, has worked out an efficient short-cut.

He does it this way:



He connects a filter, less internal parts, to the gauge part on the low side of the compressor and a cylinder containing the proper type of refrigerant to the inlet side of the filter. He then pours a charge of oil in the filter and assembles the screw-type cover. Then it is just a matter of opening the suction valve and drum service valve, and in a moment the oil has been forced into the compressor, saving a lot of time and labor.

by the certificate.

As Direction 2 to L-38 stands at present, manufacturers will not need an AA-5 or better in order to sell dealers a complete milk cooler or a milk cooler cabinet. An AA-5 or better rating will be needed, however, when manufacturers wish to sell a condensing unit separately.

DETROIT CHOICE

REFRIGERATORS are first choice of 30 items most needed by Detroiters, according to a comprehensive survey recently completed by the *Detroit Times* to determine what consumers in the area want most when civilian production is resumed.

With 5,341 consumers voting them the No. 1 preference, refrigerators led such items as nylon hosiery, rubber tires, automobiles, alarm clocks, washing machines, and bobby pins.

DISPLAY CASES

PRODUCTION of approximately eight thousand refrigerated display cases for replacement purposes during the year commencing October 1, 1944, has been authorized under Direction 3 to Order L-38. Production of such equipment has been prohibited by L-38 since September 26, 1942.

Application for permission to make these cases had a deadline of November 15, with requests to produce the units considered regardless of whether or not the concern had previously manufactured such equipment.

POST-WAR DELIVERIES

A PURCHASER may place or a manufacturer may accept a post-war purchase order which is not to be filled until after applicable WPB restrictions have been lifted, provided the manufacturer does not enter the order in his production schedule, a recent WPB ruling states.

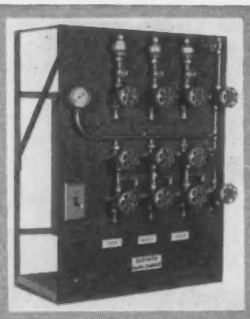
To illustrate: Some orders forbid the placing or acceptance of purchase orders for certain products unless such orders carry specified preference ratings, or unless they carry an allotment symbol or special authorization. However, there is nothing to prevent the placing or acceptance of an unrated order *subject to the condition that no steps will be taken to fill it unitl after the applicable WPB restriction is removed.*

SMALL MOTORS

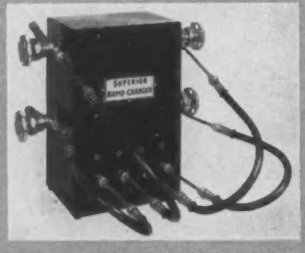
FRACTIONAL horsepower motors are expected to be available after "V-E" Day to the refrigeration and air conditioning industry to meet its 1939 level, WPB officials report.

ALUMINUM TRAILER

INCREASE of two and one-half tons in food carrying capacity is claimed for a new aluminum body refrigerated trailer built for the Army Quartermaster Corps and tested recently in a cross-country run, carrying 16,850 pounds of packaged frozen meat. The unit, built by the Spokane branch of Brown Industries, weighs less than half that of the standard Army trailer.



TYPE 630—illustrated above, is a complete refrigerant transfer system, with all equipment mounted on a special composition panel.



TYPE 631—illustrated below, is recommended for use where evacuation and discharge, and other facilities provided on Type 630 are not required.

No. 405

Superior
RAPID-CHARGERS
. . . Hi-speed refrigerant transfer systems
. . . five pounds per minute by actual test.

RAPID-CHARGER is the result of careful study of all known refrigerant transfer methods, systems and problems pertaining thereto. It has instantaneous liquid coolers—one for each refrigerant to be transferred—connected in series with a refrigerating circuit, using a thermostatic expansion valve, and a small condensing unit with pressure control.

RAPID-CHARGER is fast—no valuable time lost in filling cylinders—no purging necessary. Refrigerant losses are practically eliminated.

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SEALS . . .

Continued from page 27

paper. Use a very light pressure. Fifteen to 30 seconds will rough off the average seal; 30 seconds will polish a seal. The paper must be moved to a new spot as the grain loads up. Since the cutting action is very rapid, the seal must be examined more frequently than in the hand method.

The third method is to use a drill pad in the tail stock of the lathe at the time the seal is turning on the mandrel. Abrasive paper, held against the drill pad, and brought in contact with the revolving seal, will produce the same result as the second method, and the same precautions are necessary. For this method, no disc driver is required.

When the seal has been polished, place it on the polished shaft, put some oil and abrasive powder, Grain No. 400 to No. 600, between the faces. The seal must be pressed down evenly by hand and oscillated a few times. This will leave a dull ring on both the shaft and seal face, and any scratch or crack can be clearly seen.

A further check on the seal for leaks can be made in the following manner: Place the seal on a piece of plate glass on the drill press table, fill the bellows with gasoline, put a rubber ball on top of the seal (see Fig. 9.), and squeeze down on the ball with the drill press chuck. This

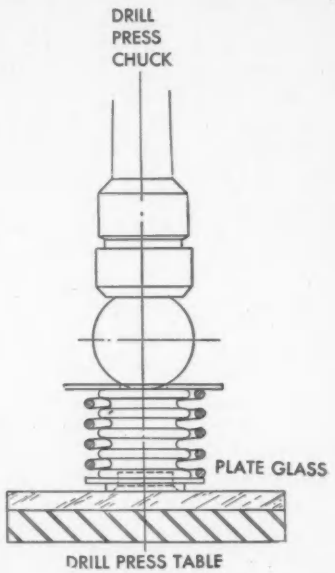


Figure 9.

will compress the bellows and raise the pressure of the gasoline contained therein. If there is a bellows leak, the gasoline will shoot out with considerable force. If the seal face is not flat, the gasoline will leak out between the face and the plate glass.

When installing a seal, always use a tool for alignment. If there is much difference between the hole in the seal and the shaft, it is necessary that the seal be concentric with the shaft. An aligning tool is shown in Fig. 10.

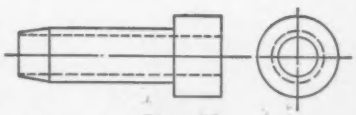


Figure 10.

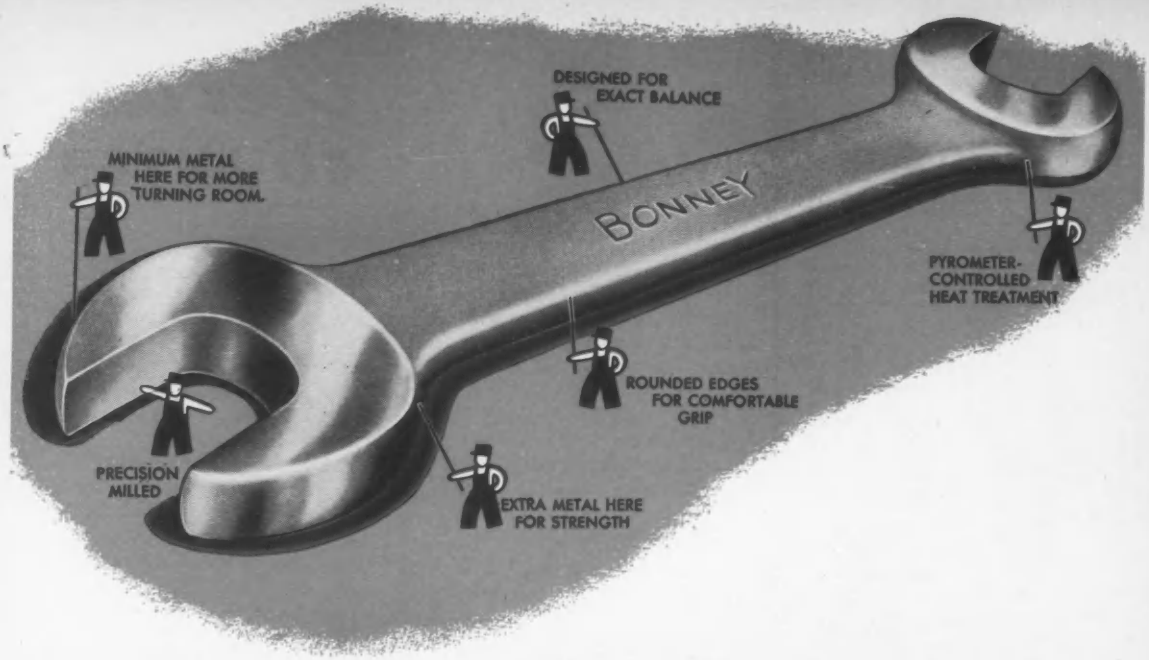
Leave the aligning tool in place until the seal has been tightened in place, then withdraw the tool. Before installing a seal, always be sure that there is a film of oil on both faces. Run in a seal without a load, if possible; small leaks may clear up after a few hours' running.

A Merry Christmas to You

We of Temprite Products wish you, our friends and customers, all good wishes for Christmas and the New Year.

TEMPRITE PRODUCTS CORPORATION

FORTY-SEVEN PIQUETTE...DETROIT 2, MICHIGAN



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When you take a good look at a Bonney Wrench, it's so easy to see why it's better.

The openings in a Bonney Engineers' Wrench, for instance, aren't just milled—they're *precision-milled*. They fit the nut exactly—no slipping, no forcing. The jaws are tapered to give you more turning room. They're reinforced with extra metal at the points of strain. The handles are rounded for an easy, comfortable grip. And something you can't see—to make Bonney Wrenches the strongest and toughest on the market, each one is given our special pyrometer-controlled heat treatment.

We put a lot into Bonney Wrenches because we want you to get a lot out of them.

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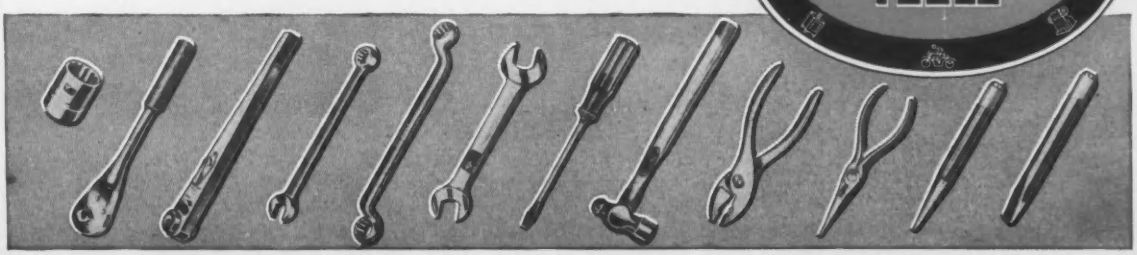
BONNEY TOOLS



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Automatic control and regulating valves for Freon, Methyl Chloride and Ammonia. A large variety of sizes and types available for practically any refrigeration requirement.

WL water regulating valves for Freon, Methyl, or Sulphur. 5/8" orifice and 3/8" FPT. Brass body construction. Large capacity—no chatter.

WP water regulating valves are available in 3/8", 1/2" and 3/4" FPT sizes. Brass body construction for Freon, Methyl or Sulphur. Easy adjustment.

WK water regulating valves are De Luxe Pilot Operated Modulating valves. Iron body, simple adjustment. Available in sizes ranging from 3/4" to 2" FPT.

WR regulating valves for Ammonia are diaphragm operated and highest quality corrosion resistant materials are used. Available in sizes ranging from 1/8" to 2" FPT.

Electrimatic valves are individually tested for efficient, economical operation. Trouble free performance.

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Ask for a copy of our latest catalog today.

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CHICAGO 16, ILL.

Over the COUNTER

I stopped off at Eddie's shop today—it was the third or fourth time I've been around to his place, but it seems like I never was lucky enough to catch him in. Eddie's in the same boat as most of the other boys—rushed to the limit, and with a lot more work than he can handle.

Seems to me like every service man I see is loaded up, some of 'em working ten to fifteen hours a day, and still so far behind that they'll never get even 'til some of their old men get back from the war and put on their overalls again.

While I was in there settlin' my business with Eddie, I noticed he had quite a few household refrigerators and old ice cream cabinets in his place . . . ones he's taken in for one reason or another. From the looks of 'em, nothing had been done about fixin' 'em up, and they were just settin' around gathering dust and takin' up space.

"Eddie," I says, "when are you goin' to get around to fixin' up these jobs and resellin' 'em? Seems to me like you'd not have any trouble moving 'em, if they were in shape to go."

"I don't know, Jim," he comes back. "I've been plannin' to get to them as soon as work lets up and I can find a little time."

"But when'll you find the time?" says I. "At the rate things are goin', the war'll be over before you get caught up with just your current calls—and then you're liable to be stuck with this stuff for good.

"You know, Eddie," I says, "you and a lot of other service men are just throwin' good dough away by leavin' this used stuff lie around your shop, instead of fixin' it up and gettin' it back in use.

"Lots of folks need that kind of equipment right now, and they'll pay good money pronto if they can get some of it that's in running condition. Fact is, they need it so bad they'll even forget about the looks, if the jobs give refrigeration.

"Now's your real chance to find a market for that used equipment," I went on, gettin' into my sermon. "After the war's over and new production's been started, people will find some way to get along until they can buy new merchandise, and the used stuff will go begging."

I'll give you three guesses what Eddie's answer was. Sure, he knew the boxes would be easy to sell, once he got them in shape—but where was he goin' to find the time?

"Every time I start workin' on one of them," he tells me, "in comes an emergency service call—and there goes my chance to get anywhere with these jobs. After all, you got to take care of your customers, don't you?"

But I had an answer for that one. "Are your customers goin' to pay you back for the money you're gonna lose on this equipment if it's still layin' around here when new units can be had? Of course they're not! After all, you got some hard cash invested in these jobs, haven't you? Six or seven hundred dollars at least, I'll bet."

Eddie thought a minute and then said yeah, he figured it must be about that much—and the hell of it was that for a couple of hundred dollars at the most, he could put the whole wad of

stuff back into shape for sellin'. He said he'd had some offers for it already, and it wouldn't be any trick to get fifteen to eighteen hundred dollars for the lot.

"There's your hooker," I says. "How many calls do you have to handle to make eighteen hundred dollars, or even the six or seven hundred you got tied up in this equipment? That's somethin' to think about."

When you come right down to it, gettin' used boxes back into use is

just about as important as handlin' outside service calls. It's like I told Eddie—it's your dough that's tied up in a deal like that, and nobody's goin' to shed any tears if you take a lickin' on it.

What I'd do is set aside three or four mornings a week to work on those units—and I'd handle it just like I was on an outside call, and peg away at it until I had the stuff back in shape—and sold. After all, if you're out on one call and another comes in, there's nothin' you can do about it 'till you've cleaned up the first one. That's just how I'd look at this thing —I'd stick at it until I'd put in the hours I'd figured on. Then I'd go ahead with my outside work.

I'll bet there's lots of service men just like Eddie—with plenty of used equipment back in their shops, that they've got their own hard cash tied up in, just waitin' to be fixed when they get around to it. The funny thing is, they'll never get to it, unless they make up their minds to handle it just like I suggested to Eddie—set aside a regular time for workin' on it, and then stick with it 'til the job's done.

If they keep on lettin' themselves get side-tracked by pressure of calls from the outside, sure as shootin' they're goin' to wind up with a raft of used stuff in their shop, and nobody to sell it to.

And that shouldn't happen to a smart service man.

SEEGER GETS A PAIR OF PRODUCTION AWARDS

The Seeger Refrigerator Company has been given the highest inspection rating given out by the War Department, Army Air Forces, Air Technical Service Command for manufacture of the bomb rack for the B-29 Super Fortress.

The Seeger Refrigerator Company formally received the Army-Navy "E" award on October 21st.

NEW HOTPOINT CHICAGO CENTRAL REGION OFFICE

Edison General Electric (Hotpoint) Appliance Co. will establish central region sales offices and merchandise display rooms December 1 in the Merchandise Mart, Chicago, according to W. H. BonDurant, regional manager. The central region includes the Chicago sales district, which will headquarter in the new offices under the direction of L. E. Buxton, district manager. The company's other district sales offices in the region are at Cleveland, Kansas City, and Minneapolis.

TESTED AND APPROVED

Refrigerants

FOR TOMORROW'S REFRIGERATORS

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LIQUID Sulfur Dioxide BY ANSUL*

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In large measure, the success of your automatic refrigerators depends on the efficiency and dependability of your refrigerants. Refrigerants are the "life blood" of refrigerators!

Ansul Liquid Sulfur Dioxide is an ideal refrigerant for household refrigerators, with a long and impressive record of trouble-free performance.

Ansul Liquid Methyl Chloride is recommended for small commercial units. Its performance record is equally excellent.

Backed by pioneers in the field, Ansul refrigerants are clean, dry and pure. Ansul service is friendly and deliveries are dependable. Phone, wire or write—today!

THIS TECHNICAL BOOK

(*3rd Edition*)

on Ansul Refrigerants is still available. If you do not have a copy, send for one. It's free.

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ANSUL CHEMICAL COMPANY

Marinette, Wisconsin

Agents for Kinetic's "Freon-12" and "Freon-22"

LOOK AT FROZEN FOODS!

Continued from page 26

would account for 25 per cent of the nation's annual food bill.

And the experts were not kidding themselves. They pointed to such statistics as these; a retail sales increase in 1934—first year figures became generally available—of 67 per cent over the previous year; in 1935, 47 per cent; 1936, 50 per cent; 1937, 60 per cent; 1938, 50 per cent; 1939, 40 per cent.

Alert foodmen everywhere peeled a weather eye as new developments kept the industry in a state of constant, exciting change. Door to door retailing was introduced in the East by Bob White Frosted Foods and by Good Humor of New Jersey; R. H. Macy, acknowledged merchandising experts, installed quick-frozen foods departments in their Manhattan and Newark (Bamberger's) stores. Booth Fisheries Corporation, hitherto solely a fish packer, ended its 1939 fiscal year—during which a complete line of frozen foods was introduced under the Booth label for the first time—with net income showing a $100,000 increase over the previous year.

Manufacturers of domestic refrigerators sized up the situation and included special low-temperature compartments in their new models; demand for increased low-temperature storage facilities mushroomed. Pioneering restaurants and hotels featured quick-frozen fruits and vegetables on their menus.

What has happened to the quick-freezing business since 1940 bears out the earlier predictions. The *Wall Street Journal* reports that food freezers and their equipment makers are preparing for annual sales of 3.5 billion pounds within five years after war's end.

Some authorities predict that within the same length of time frozen foods will be retailed by 100,000 stores—approximately one out of every four groceries and combination grocery-meat markets in the country.

Some concerns have found that complete, cooked, meals can be quick-frozen and handled many times more conveniently. Installation of dispensing cabinets in connection with a cigar-store concession in the big city office building might be a good outlet for frozen foods.

Whatever the future of this business, however, the refrigeration man is in a key position. There are freezer storage rooms to be built and converted; and thousands of retail frozen food dispensing and storage cabinets to be sold, installed, serviced.

It's a wise refrigeration man who will get out and secure some of the low-temperature business crying to be had—now.

Editor's Note: Next month's frozen food article, second in this series, looks into the locker plant business from the refrigeration man's standpoint. Meanwhile, we're ready and willing to answer whatever questions you may have about the frozen food business. Don't hesitate to write for addi-al information.

Refrigeration
AND AIR CONDITIONING
YOU will find NIBCO WROT Fittings, return bends and tubular parts mighty useful in laying out air conditioning or refrigeration equipment. In many cases, instead of having to buy a special part, you will find what you need in our standard line...tees, els, couplings, reducers, adapters, crosses, return bends, hangers ...more than one thousand items and sizes are listed in Catalog 613. If you do not have a copy, write for it today.
NIBCO WROT Copper Fittings
NORTHERN INDIANA BRASS CO.
ELKHART, INDIANA
VALVES AND FITTINGS SINCE 1904

GLENN MUFFLY

Glen Muffly, of Springfield, Ohio, has been retained as consulting engineer on refrigeration for the Admiral Corporation, according to L. H. D. Baker, vice president in charge of Admiral's Appliance Division.

W. A. MINKLER

William A. Minkler has been named application manager for air conditioning of the Westinghouse Electric Elevator Co.

AIR CONDITIONING . . .

Continued from page 19

Would you be willing to pay ten or fifteen dollars a month more for an apartment that would keep you feeling like a million dollars all summer instead of sweltering all night every night and then dragging down to the office all dangled out? So would the rest of the inmates. These being the facts, wouldn't the management be glad to install air conditioning that would result in increased rentals and reduced vacancies? Well, this can be done, too.

A Factory Installation

About three years ago the writer was considering ways of air conditioning a proposed factory—35 acres under a single roof. Various experts agreed on a load of 6,000 to 6,500 tons. Bids taken on a conventional air conditioning system of this capacity plus the cost of the usual steam heating system showed a total cost of over two million dollars.

However, the writer took stratification of temperature and other things into account and came out with an estimated load of 5,000 tons; and had a dream about a system combining heating and cooling, operating under effective temperature control instead of the usual dry bulb thermostatic control.

Apartment House Jobs

The dream air conditioning plant has been functioning for three years in one of the most hot and humid parts of the country and is said to be one of the best, and it represents a *saving of more than six hundred thousand dollars* in cost to the management.

The ideas that saved more than half a million bucks on one job are adaptable to apartment house air conditioning, too. There are even some added features available here, such as throwing the air conditioning effect from one exposure to another as the sun moves during the day. Using gas engine drive instead of electric motors in addition to the features already mentioned, and assuming an increase of 20% in annual income due to the installation of air conditioning, indicates that the first cost of the entire system can be written off in less than two years.

Existing buildings are a bit more difficult. Naturally, the air conditioning installation in the apartment building already constructed will cost more, hence take longer for increased income to write off. But there will be nothing the management can do but install air conditioning if new apartments are built in town that do include this boon to the inmates. Even if it takes eight or ten years to write off the cost, it is still a good investment.

Give Market Type It Wants

Office buildings and hotels are pretty much the same story as the apartment.

Certainly there are plenty of indications that post-war air conditioning offers unlimited business possibilities. To take advantage of these possibilities, you must select the field for which you are best suited, and then furnish the type of air conditioning it wants, at the price it will pay. Trying to force the public to buy what somebody else thinks is best for it generally does not make a particularly lucrative business. The slogan for the residential branch of the air conditioning industry should be: "All-year comfort for the price you pay for your family car."

CHECK DOOR GASKETS ON EVERY JOB!

Make a habit of checking door gaskets on every refrigerator you repair...you'll earn more money and do a better service job. Worn or deteriorated gaskets cause heat losses ranging up to 9% on a high percentage of used refrigerators, and cost the owners money.

Jarrow Gaskets for all popular makes of refrigerators conform to original specifications ...are recognized as the ideal gaskets for replacement.

Your Jobber Has Jarrows In Stock

JARROW PRODUCTS
1020 N. LA SALLE ST., CHICAGO 10, ILLINOIS

DOLE
Vacuum
COLD PLATES
Maximum Refrigeration Efficiency
Trade Mark Reg. U. S. Pat. Off.
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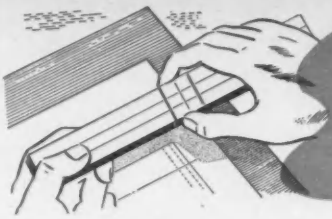
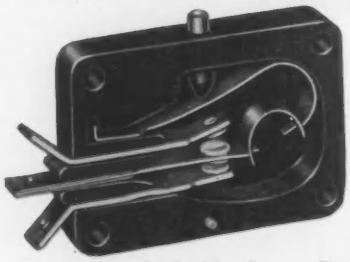


New Products

Miniac Snap-Switch

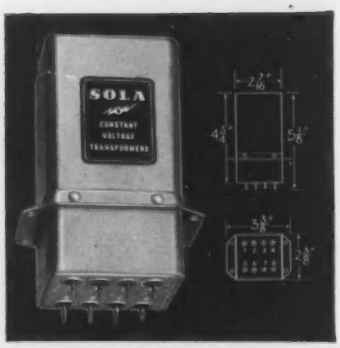
Reported to be the smallest fully enclosed snap-action switch ever built, the new Miniac is only 17/64" thick, 13/16" high, and 1-3/16" long, fully enclosed in a bakelite case with 4 mounting holes 3/32" diam. Actuation is with a stainless steel pin plunger. All parts are non-corrosive and all contacts are of silver. Main blade, contact blade, and rolling spring made of beryllium copper. Rated at 15 amps., 115 volts A.C. Furnished in single pole, normally open and



normally closed, double throw. Designed to permit leaf type or overtravel plunger type actuators to be attached to the case. Manufactured by the Acro Electric Company, 1412 Superior Ave., Cleveland 14, Ohio.

Constant Voltage Transformer

This small, hermetically sealed constant voltage transformer for through-chassis mounting, has been designed for such applications as heating and



refrigeration controls, television and FM receivers, vacuum tube volt-meters, electronic gauging and inspection equipment, photo-metric instruments and other similar applications where precisely regulated supply voltage is mandatory.

At any reasonable transformation ratio of input to output it will provide a single output voltage constant to within ± 1% of rated requirements regardless of line voltage variations as great as ± 12 to 15%. Capacities up to 15 VA, 60 cycle operation are available and are supplied with a separate capacitor unit for external mounting. Bulletin No. CV-105 gives complete electrical and mechanical specifications. Sola Electric Company, 2525 Clybourn Avenue, Chicago 14, Illinois.

K-25 Locker Insulation

Balsam-Wool K-25, a new insulating fibre for locker and cold storage plants, has been announced by the Wood Conversion Company. This new insulation is a fill type, similar to the Balsam-Wool used extensively in the refrigeration and freezing industry, has been especially developed for use in this construction.

Shipped in bales, Balsam-Wool K-25 fibre on the job is fluffed to a

low density and then hand packed in walls, floors and ceilings. When packed in place, its density is from three and a half to four pounds per foot—this effects a saving in material.

Balsam-Wool K-25 will be sold through regular distributors of locker and cold storage equipment. Many areas are now being serviced and new distributors will be announced shortly. Further information may be obtained by writing Wood Conversion Company, First National Bank Building, St. Paul, Minnesota.

One-Piece Clamp

A one-piece hose clamp using no gears, thumb screws or other locking means is announced by Tinnerman Products, Inc., Cleveland, Ohio. The clamp may be snapped over the hose into pre-latched position by hand, as

shown in left illustration, above. Final lock is made with hand pressure on ordinary pliers, as shown at right. Made for low pressure connections, this new clamp has a lower profile, is light in weight and exerts an even pressure around the entire circumference of the hose. Being a one-piece clamp and using no threaded parts, it is said to reduce weight and assembly time. Made of S.A.E. 1060 spring steel with parkerize and zinc chromate primer finish. Available for all sizes of AN and Ordnance specification hose in a wide range from ½" O.D. and up.

Frozen Food Retail Cabinet

Design for a new frozen food dispensing case has been announced by the Tyler Fixture Corporation, Niles, Michigan. The cabinet is 8 feet long, 82 inches high, and 30 inches deep.

The open sales compartment is large enough to accommodate 250 average sized frozen food packages in the lower half; except on very busy days, it is recommended that the frozen food packages be kept below a point 8 inches below the rub rail.

The lower part of the case, available through three doors, provides 17 cubic feet of storage space. The cabinet operates with a one horsepower air-cooled machine which should have a capacity of 3200 BTU's at a suction temperature of minus 25 degrees. In a 90 degree room, a machine of this size will give proper performance on a running time of 16-18 hours a day.

So far, WPB has not released any of these cases for manufacture but it is hoped that they will be among early items released in the next few months. (See photo on page 24)

VISOLEAK

is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain – just like the discoloration on a carburetor in which ethyl gasoline has been used. Can be used *safely* and *effectively* with any type of refrigerant.

See your jobber today. If he has not stocked Visoleak write for complete information.

WHOLESALE PRICES		CASE LOTS
4 ounce bottle	$ 1.00	48 bottles
8 ounce bottle	1.75	24 bottles
1 pint bottle	3.00	24 bottles
1 quart bottle	5.00	12 bottles
1 gallon can	16.00	6 cans

SAVE 10% ON CASE LOTS

WESTERN THERMAL EQUIPMENT CO.
5141 ANGELES VISTA BLVD.
LOS ANGELES 43, CALIF.

LVT AND TZ

The LVT . . . called the "alligator" . . . doesn't care whether it's on dry land or in water. This rough, tough, go-gettin' little amphibious tank climbs ashore over coral reefs or through shifting sand or mud, with guns blazing. It's unstoppable and delivers the goods.

TZ . . . short for Thawzone . . . whether on protective patrol in a dry refrigeration unit or aggressively attacking in a wet system, is a live, active liquid dehydrant that hates moisture and acidity and destroys them chemically. It's irresistible and does a job. Ask your refrigeration jobber for TZ. . . . "The Moving Dehydrant."

THAWZONE
Fully Protected by U. S. Patents
The PIONEER FLUID DEHYDRANT

HIGHSIDE CHEMICALS CO.
195 Verona Ave.,
NEWARK 4, N. J.

Scenes shown above were snapped during the seventh annual convention of the Illinois Association of Refrigeration Service Engineers Society, October 14 and 15. Seventy-five members attended the business sessions. Above, left: Jobber representation at the meeting included (front row) L. C. Keely, Airo Supply Co., Chicago; J. P. Glass, Chase Refrigeration, Chicago; Fred Hovey, secretary, N.R.S.J.A. Back row, O. L. Easterbrook, Marquette Equipment, Peoria; Gus Larson, Gustave A. Larson Co., Milwaukee; Richard Potter, U. S. Electric, Springfield; and S. N. Mohler, R. E. Thompson Co., St. Louis.

Lower left: At the speakers' table (left to right) are Clarence Stumpf, Ontarioville, president of the Illinois association, Clarence Bushkopf, national R.S.E.S. officer; E. A. Piesskott, R.S.E.S. national president; and H. T. McDermott, national secretary.

Right: New officers of the association (left to right) are Archie Fait, president; Keith Ruyle, second vice president; John Sackey, treasurer; Henry Genin, sergeant-at-arms; W. C. Metcalf, first vice president; and R. E. Saunders, secretary. Photos are by Irving Alter, The Harry Alter Co., Chicago.

A. L. Mitchell (right), president of the New Zealand Institute of Refrigeration, greets R. J. Thompson, Kinetic Chemicals, guest speaker at October meeting of Twin City section, A.S.-R.E., as Dr. R. C. Jordan, section chairman, looks on.

Overflow crowd of Cleveland R.S.E.S. members heard W.E. Gates, General Electric, speak on "Liquid Air" at the organization's October meeting.

R. H. PIZOR

R. H. Pizor, who has been in the sales department of the Norge division of Borg-Warner Corp. since 1934, has been appointed key sales specialist and will return to the field immediately, having completed two years in an important war job in the company's Muskegon, Mich. plant. He will take to the field immediately to assist in dealer contact work.

MR. PIZOR

C. E. LUND

Appointment of C. E. Lund as Director of Research for the Seeger Refrigerator Company, St. Paul, was announced by Walter G. Seeger, President.

Mr. Lund, a Master of Science in mechanical engineering, comes to Seeger from the University of Minnesota, where with Dr. R. C. Jordan, Associate Professor and Director of Industrial Engineering Laboratories, he developed the refrigeration laboratory of the University of Minnesota and built the course in Applied Refrigeration which is sponsored by the U. S. Office of Education under the Engineering Science Management War Training Program.

MR. LUND

ARLEY L. BAKER

Alco Valve Company, St. Louis, manufacturer of refrigeration control valves, has announced the appointment of Arley L. Baker to the post of application engineer.

Mr. Baker comes to Alco from Curtis Manufacturing Company where, from 1939 until 1944, he held the position of district representative for the north central territory.

MR. BAKER

Mr. Baker studied engineering at the University of Illinois. His head-

quarters with Alco Valve will be at the main office, in St. Louis.

HUGO C. SMITH

Hugo C. Smith has recently been added to the staff of Alco Valve Company, as field engineer. His territory, with headquarters at Cleveland, will include Ohio, West Virginia and the western part of Pennsylvania.

MR. SMITH

Mr. Smith is familiar with the refrigeration field, having spent ten years with Frigidaire Sales Co. and five with Carrier Corp. The latter connection was terminated by the war. His previous experience has been in the Cleveland area.

GEORGE ALLEN

Kerotest Manufacturing Company has announced the appointment of George R. Allen as General Sales Manager of their Brass Division, effective November 1.

For the past eight years, Mr. Allen has been associated with Mueller Brass Company, as Sales Manager of their Standard Products Division. On graduation from the University of Michigan in 1932, he joined the Household Refrigeration Division of Kelvinator Corporation, later moving to the Universal Cooler Company at Detroit.

Mr. Allen is secretary and a director of the Refrigeration Equipment Manufacturers Association, and was recently reappointed to the General Refrigeration and Air Conditioning Committee of the War Production Board.

WHAT IS THIS PIONEER PLANNING TO DO

It's easy to predict the future of refrigeration—but it may be harder to make the prediction stick. Whether you think it will be the farm, the home, or industry that will make the biggest demand on post war refrigeration your opinion is likely to be prejudiced by the field you know or like best ★ ★ But we can tell you this with complete confidence—

THE M & E POST WAR LINE OF CONDENSING UNITS *will be both* COMPLETE *and* VERSATILE *with Integral Units from 1/4 to 5 H.P.*

ADAPTABLE TO ALL REQUIREMENTS

—and, as before the war, the Quality, materials, and operating efficiency will again be worthy of your complete respect.

★ A WORD TO JOBBERS, DISTRIBUTORS, MANUFACTURERS AGENTS, CABINET MANUFACTURERS.

Although we are not ready to make delivery it is not too early to discuss post war merchandising. Our plans are still flexible and we invite correspondence from responsible individuals and organizations interested in the sale or use of M&E refrigeration products.

MERCHANT & EVANS COMPANY

GENERAL OFFICES

2035 WASHINGTON AVENUE

Philadelphia 46, Pa.

Plant at Lancaster, Pa.

A. H. ROSE

Elevation of Alfred H. Rose to the position of General Sales Manager of Portable Elevator Mfg. Co. has been announced by company officials. Mr. Rose joined the firm a year ago as Sales Manager of the Refrigeration Division, coming from Washington, D. C., where he served on the War Production Board as an industry advisor.

MR. ROSE

GERALD T. HASMANN

Gerald T. Hasmann has been appointed installation and service manager of Oil Heating Devices, Inc., distributor in the Cleveland area for York and Kelvinator commercial and industrial refrigeration equipment and air conditioning. Mr. Hasmann is a member of the American Society of Refrigerating Engineers and a member of the Refrigeration Service Engineers Society.

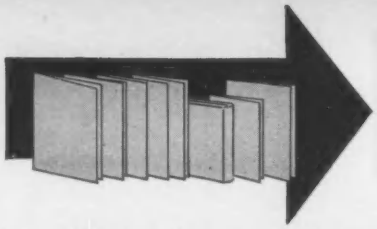
MR. HASMANN

D. G. CAMERON

Donald G. Cameron has been appointed to head the engineering department of Penn Electric Switch Co., Goshen, Ind.

Mr. Cameron, a graduate electrical engineer, formerly was associated for

15 years with General Electric Co., and in recent years was superintendent of that company's Aircraft Instrument Division, West Lynn, Mass.



Useful Literature

The publications featured on this page were written by experts. They are FREE publications. To obtain these write to THE REFRIGERATION INDUSTRY, 812 Huron Road, Cleveland, 15, Ohio. If there is some delay in receiving the material requested, please understand that this is due to our operating with a minimum staff. We shall put through all requests as rapidly as possible.

84—Leak Detector . . . Catalog describing its line of Halide leak detectors and allied equipment. Issued by Lenk Mfg. Co.

85—Cold Plates . . . Literature illustrating and describing its line of prime surface equipment for locker plants, sharp freezing, cold storage, milk coolers, etc. Issued by Stangard-Dickerson Corp.

86—Frozen Foods Case . . . A six-page bulletin illustrating and describing its self-service, wall-type frozen foods display case, which will be available for delivery after present production restrictions are lifted. Issued by Tyler Fixture Corp.

87—Cooling Towers . . . Two bulletins (Nos. 600 and 700) describing most recent developments in its types 2-D and B cooling towers for air conditioning, water jacketed machinery, and industrial processing. Issued by Binks Manufacturing Co.

88—Controls . . . A catalog illustrating its line of "hydraulic-action" controls for refrigeration, air conditioning and heating, and outlining construction and performance features. Issued by White-Rodgers Electric Co.

89—Valves . . . An eight-page catalog covering construction details and other data on its lines of pressure reducing and regulating valves, water regulator, pressure relief valves and automatic valve specialties. Issued by A. W. Cash Valve Mfg. Corp.

90—Industrial V-Belts . . . A 74-page Handbook for Industrial Applications of V-Belts, discussing operating advantages, installation and care, and general information covering the whole field. Tables on industrial belt selection, installation, service factors and other data are included. Issued by B. F. Goodrich Co.

91—Insulation . . . A publication by the National Bureau of Standards, in cooperation with the Industrial Mineral Wool Institute, titled "Commercial Standard CS105-43, Mineral Wool; Loose, Granulated or Felted Form, in Low-Temperature Installations." Includes recommendations by engineers in the refrigeration field generally. Available from Industrial Mineral Wool Institute.

92—Thermocouple Data Book . . . A 40-page bulletin (S2-5) describing products, listing prices, and offering recommendations for thermocouple users, and giving data on selection of units, lead wires, protecting tubes, etc. Includes temperature conversion tables and fraction-decimal equivalent chart. A Wheelco Instruments Co. release.

93—Food Lockers . . . A four-page leaflet listing sizes and construction features of its line of storage units for locker plants. Issued by Master Manufacturing Corp.

94—Cold Plates . . . An eight-page booklet illustrating and describing its lines of low temperature plates for refrigerated trucks, for hardening rooms, sharp freezing and wrapping tables, and for rebuilding soda fountains and cabinets. Issued by Kold-Hold Manufacturing Co.

95—Insulation . . . Information on the newly-developed K-25 Balsam-Wool insulation for cold storage and locker plants. Issued by Wood Conversion Co.

MAIL THIS COUPON FOR FREE LITERATURE

Refrigeration Industry, 812 Huron Road, Cleveland 15, O.

I should like a copy of the literature listed below:

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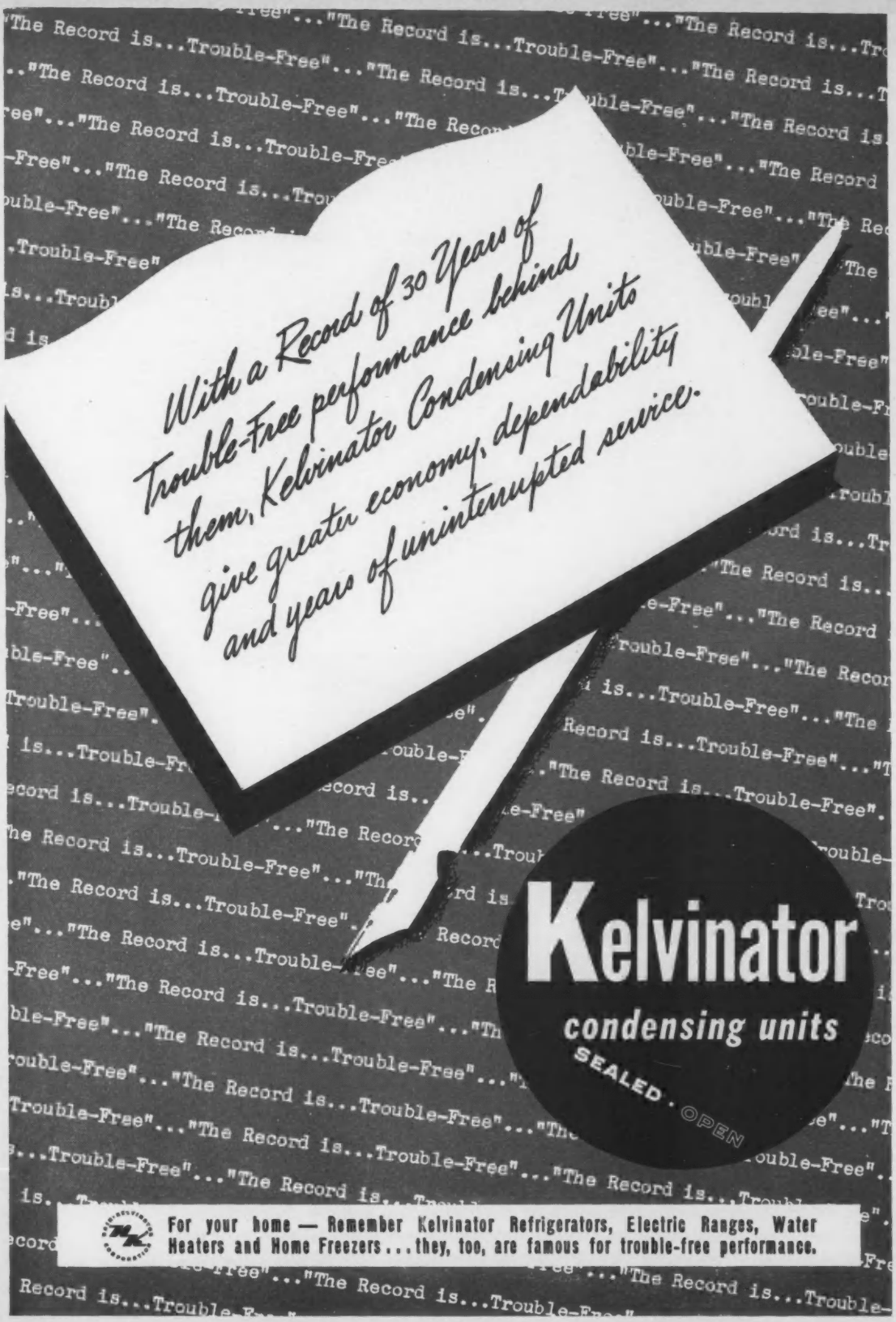

With a Record of 30 Years of Trouble-Free performance behind them, Kelvinator Condensing Units give greater economy, dependability and years of uninterrupted service.
Kelvinator
condensing units
SEALED · OPEN
For your home — Remember Kelvinator Refrigerators, Electric Ranges, Water Heaters and Home Freezers . . . they, too, are famous for trouble-free performance.

THEY PROFIT MOST . . .

Continued from page 17

Young says. Inexperienced men without parts or equipment start out on this basis.

For experienced men with tools and equipment valued at $500, trial-junior memberships are available; if a man has equipment worth $1000, he may qualify for trial-senior standing. But for his first three months he's still on trial, and becomes a permanent member only after completing this period successfully.

How the 'Split' Works

Executive memberships, however, can't be bought; all officers must come from within the organization. Executive members meet regularly once a month, and every third meeting is a general session, at which all members are present.

This "profit-hour" we've been mentioning so much—how is it figured? Well, here's an example: if for any quarter the net profit after assessments for the business are deducted amounts to $2000, and the total hours worked by all members, as shown on the time cards, equals 2000, the profit would equal one. And all members share proportionately, dependent upon the share of the profits for which they are responsible.

Pay for members is a flat $1 an hour, plus 10 per cent commission on sales of parts and equipment. So, besides the share he receives every quarter according to his membership standing, the service man with a merchandising slant can build up his own individual kitty.

Opening time, 8 a. m., and minimum work-week, 40 hours, are set forth in the constitution of the organization. Any member has the right to submit a time table or working schedule to the executive board for consideration; if approved, he works those hours rather than the ones applicable under ordinary circumstances.

Promptness Pays Off

Service men, who have developed their own "zone" system for covering the city, report in to the office once a day, to deliver their daily time and sales record and pick up a stock of parts. There's an extra dollar in it for them if they show up before 9 o'clock. The men keep their own time and sales records, and turn in work orders covering every call they make. It's in the constitution that "a service work order must be made out for every call", and that "work orders must be turned in on the following day if job is completed." Also, the constitution provides that all collection money must be turned in on the following day.

Enforcing this system—and it hasn't been hard—has kept the books right up to date, and has cut bookkeeping time to a minimum. Routing of calls has been made easier by requiring—again in the constitution—that the men must call back before returning to the office, if they are more than three miles away.

Detroit Co-op operates five service trucks at present, two of which are driven by the supervisors covering the east and west sides. Later on, it is hoped to make all "company" cars "supervisors' cars". At present, members who use their own machines are furnished license, use stamp, and oil and gas, besides uniforms—the whole outlay averaging about $57 per month per car. In addition to insurance on the cars, property damage and liability insurance is carried on all members.

Vacations—With Pay

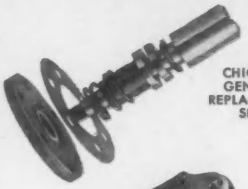
Considering its unusual overall method of operation, you'd expect this organization to have something special even in the way of vacations—and you'd be right. Here's how Detroit Co-op has worked it out:

For the first six months of membership, no vacation; six months to a year, one day a month; after a year's service, two days a month—two *work days* a month. Members can take this vacation any way they want it—they can use it up as it occurs or let it accumulate and take the whole 24 days at once. And their salaries go on all the time they're away. The plan is especially valuable if a member is taken ill, and is away from the job for several days. If he's built up his leave, it won't make any difference in his income.

E. T. MORTON

Evans T. Morton, formerly in charge of laboratory development on major appliances for Stewart-Warner Corp., has been appointed design engineer of the refrigeration division of the Admiral Corp.

Why the Trend Is Strong to CHICAGO SEALS and VALVE PLATES



CHICAGO GENERAL REPLACEMENT SEAL

ONE OF CHICAGO'S VALVE PLATES

Chicago Seals and Valve Plates make a better servicing job on all refrigerators, in less time, at less cost, at more profit . . . and more service men and more jobbers are finding out this fact every day.

CHICAGO SEAL CO.
20 North Wacker Drive, Chicago 6, Ill.

"CLEAN-A-COIL"

FOR
DE-SCALING
CLEANING

WATER COOLED CONDENSERS, COOLING COILS, EVAPORATORS.

NOT CLASSIFIED AS CORROSIVE LIQUID

Write for Descriptive Literature or Consult Your Local Jobber

Standard Solvent Co.
CHICAGO

THE PRACTICAL Refrigeration Engineering MANUAL . . . by Harold Smith

REVIEW

(Before continuing with engineering applications, it seems advisable to review briefly the important points covered in previous chapters.)

CHAPTER I: HEAT LEAK

ALWAYS remember that the flow of heat through the insulated walls of a refrigerated space represent a continuous heat load, 24 hours a day. Therefore, it is most important that full and accurate information be obtained regarding the construction of the fixture, thickness of insulation, kind of material used, temperature surrounding the fixture, and temperature inside the fixture.

Usually the temperature within the fixture remains the same throughout the year, but the outside temperature may change with the seasons. As the heat leak figures must cover the maximum conditions, the summer conditions are usually the ones that require careful checking.

Fixtures in kitchens and other locations where unusually high artificial heat surrounds the fixture must also be carefully taken into consideration. The maximum hourly heat leak load is the one to be used in determining the refrigeration load. The heat leak load formula is:

Total sq.ft. surface (Top, bottom, sides, and ends) x "K" factor x temperature difference between outside and inside air. Sq. ft. surface x "K" factor x T.D. equals Heat Leak.

CHAPTER II: SERVICE LOAD

The service load, as in the case of heat load, must always reflect the maximum service conditions. If there is an abnormal service condition that exists only at very infrequent intervals, it is usually safe to use the more standard condition.

However, the engineer must use good judgment in the matter, and in some instances add a 10 per cent safety factor to take care of the abnormal load. The most important thing is to be sure to include all factors contributing to the total service load.

The standard service load factors represent heat entering fixture while:

1. Loading and unloading refrigerator.
2. People working in fixture.
3. Artificial heat within fixture, from lights, motors of flames.
4. Infiltration of warm air around doors and windows.

Check chapter II for multipliers used to develop service load.

CHAPTER III: PRODUCT LOAD

Product load is divided into two general classifications:

1. Storage of products already processed and cooled.
2. Processing and freezing.

The loads covering products in storage are usually rather small, and can generally be covered by the simplified formula listed in Chapter III. The important consideration is an accurate knowledge of the temperature of the product when it reaches the fixture, and the length of time it remains in the fixture.

When required temperature reductions are small and product remains in the cooler for several days, the load is usually comparatively light.

The processing and freezing load, however, are quite complicated, and accurate information should always be obtained regarding the product being processed, number of pounds (maximum) per day, temperature of product at the beginning of processing, and final processed temperature.

The specific heat factor of the product must be known; and, in the case of freezing, the latent heat of freezing and specific heat below freezing also must be known. As most processing operations are completed within a 24 hour period, the refrigeration load is usually quite a heavy one, and should be figured accurately and in complete detail. Specific heat and latent factors are listed in detail in Chapter III.

Author's Note: In Example No. 2 of Chapter III (Product Load), appearing in the August, 1944, issue, an error in computing load

GOLDBERG CHRISTMAS PARTY DECEMBER 14

The annual Christmas parties of the Herman Goldberg Co., Chicago manufacturers' agent, have become somewhat of an institution in mid-western refrigeration circles. The 1944 party will be held on December 14 in the Gold Coast Room of the Drake Hotel.

Based on previous attendance, preparations are being made to accommodate eight hundred or more people. Entertainment will include an orchestra for dancing and specialty acts selected from the Chicago area.

L. N. LUCAS

Lawrence N. Lucas has been promoted to general sales manager of the soda fountain, frosted food and ice cream cabinet divisions of Bastian-Blessing Co., Chicago. Formerly general sales manager of Russ Soda Fountain Co., Cleveland, he became associated with Bastian-Blessing when it absorbed the Russ company.

figures was made. The corrected figures are given below, and should be substituted for the original figures in making your computations.

Lines 8 and 9 in Example No. 2 should be changed to read as follows:

300 lbs. beef: 300 x 97.8 (latent heat of freezing) equals 29,340
300 lbs. vegetables: 300 x 130.0 (latent heat of freezing) equals 39,000

Total 68,340

Line 14, showing the total load for freezing, should be changed from 56,242 to 68,340, which would give a total load of 99,876 B.T.U.'s, instead of 87,958, as shown in the original computation.

Per-hour product load figures also should be changed to include the figure of 99,876 B.T.U's instead of 87,958. This would result in a B.T.U. load of 16,646, (instead of 14,660) if the product is to be frozen in 6 hours; of 8,323 (instead of 7,330) (instead of 7,330) if product is to be frozen in 12 hours; and of 4,162 (instead of 3,665) if product is to be frozen in 24 hours.

ENGINEERING LOAD SURVEY

Name ..... Date.....194....

Street .....

City ..... State..... Phone No.....

Kind of Business .....

Products to Be Refrigerated.....Lbs.....Temp. in.....

(List Items and Weight of Items Every 24 Hours)

.....Lbs.....Temp. in.....

.....Lbs.....Temp. in.....

.....Lbs.....Temp. in.....

Size of Fixtures: A.....'....."L;....'...."W;....'...."H. Temp.....°F. Insulation Thickness....."

(Outside) B.....'....."L;....'...."W;....'...."H. Temp.....°F. Insulation Thickness....."

C.....'....."L;....'...."W;....'...."H. Temp.....°F. Insulation Thickness....."

D.....'....."L;....'...."W;....'...."H. Temp.....°F. Insulation Thickness....."

E.....'....."L;....'...."W;....'...."H. Temp.....°F. Insulation Thickness....."

Location of Fixtures.....Basement;.....1st Fl.; Other Locations.....

Maximum Air Temperature Surrounding Fixtures.....°F.

Location Condensing Units.....Basement;.....1st Fl.; Other Locations.....

Maximum Temperature Surrounding Condensing Units.....°F. Air Cooled.....Water Cooled.....

Current Characteristics:.....Volts.....Cycle.....Phase D.C.—A.C.

Outside Air Temperature.....°F. Inside Air Temperature.....°F.

Inside Air Temperature.....°F. Evaporator Temperature.....°F.

Heat Leak Temperature Difference.....Degrees Temperature Difference.....Degrees

Usage of Fixtures:.....Retail Service.....Storage.....Processing.....Freezing.....Chilling.

Fill in with Complete Information for Accurate Analysis of Load Requirements.

Submitted by..... Street..... City..... State.....

.....Engineer

AMINCO
OIL SEPARATORS

Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from ½ H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

Full descriptive bulletins on request.

AMERICAN INJECTOR CO.
1481 - 14th AVE. DETROIT 16, MICH.
Van D Clothier, 1015 E. 16th, Los Angeles
George L. Boone, Rm. 735, 1775 Broadway, New York
W. H. Cody, Santa Fe Bldg., Dallas
Export: Borg-Warner, 310 So. Mich., Chicago

If your AIR-CONDITIONING OR REFRIGERATION EQUIPMENT has gone to War...

If the equipment you are now manufacturing is essential to war production plants, housing projects, or to the armed forces, Wagner will gladly figure with you on your motor requirements. Consult the nearest of Wagner's 29 branches, located in principal cities and manned by trained field engineers.

Write For Bulletins

You should have Bulletins MU-183 (Single-Phase Motors) and MU-182 (Polyphase Motors). Besides these two bulletins you should have Service Bulletins MU-7, MU-26, MU-30.

M44-21

Wagner Electric Corporation
ESTABLISHED 1891
6442 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

PLAN POST-WAR FINANCING

Continued from page 22

row current short-term loans to buy fixed or slow assets.

Fixed liabilities: Mortgages and other long-term debts, outstanding bonds in the case of large companies. Rarely should the long-term debt exceed the working capital, because eventually interest and amortization become a burden so great that sufficient working capital is not available for current obligations. The liquid position of the business is jeopardized because slow liquidating assets, such as machinery and buildings, have a prior claim on working capital.

Reduce mortgages and other long-term obligations now. This will help minimize the hazard of general inflation, and enable you to reach the post-war period in as liquid a position as possible, with working capital earmarked for future development and not for high carrying charges on fixed assets or long-term loans.

Reserves: On a survey made some time ago, only 60 per cent of the financial statements reviewed carried reserves for depreciation of buildings, furniture, fixtures, trucks and equipment. If you record no reserves or inadequate reserves, your net worth is inflated. A banker will write down your depreciable assets to his own idea of their worth, thus reducing your financial strength and rating.

The new improved equipment to be marketed after the war is creating forced obsolescence of present holdings. Few businessmen consider obsolescence on their balance sheets. At least a 10 per cent reserve for this contingency is a conservative "cushion" for this hazard. Reserves for post-war modernization should be shown on the "crash" balance sheet, including a reserve for deferred repairs that may not be made now because of manpower and materials shortages.

Net worth: The difference between assets and liabilities, in the case of an individual, the capital and surplus in the case of a corporaton. Check the return on your investment by computing the dollar profit on sales in relation to net worth. Compare the net worth to the total debt, the sum of current and fixed liabilities. If total debt equals net worth, it indicates that creditors have as much invested in your business as you have, and may soon get control. The more substantial the margin between these figures, the better off you are financially.

Some refrigeration men carry good will on their books at substantial sums. Write it down to nominal value —$1. If you don't, the credit man will. Record fixed asset values most conservatively. Write off bad debts. The net worth is inflated if asset valuations are high or liaibilities listed too low.

Refrigeration men who are itemizing balance sheet figures conservatively, who keep inflation out of financial statements with intelligent analysis, will be better able to gage safe and profitable expansion in the post-war period.

TEXAS JOBBER REPORTS ON SWING AROUND TERRITORY

R. J.McBrien, manager of The Electromotive Corporation, Dallas refrigeration jobber, reports a number of changes in the trade in East and Southeast Texas.

In Texarkana, Jolly's Refrigeration Service has purchased a new building, remodeled it and moved into their new quarters prepared to handle expanded retail domestic and commercial business.

The Johnson Plumbing Company, also of Texarkana, has handled an increasing air conditioning and refrigeration business and exects still further increases after the war.

A. H. Hoffmeyer, of Tyler, in the refrigeration business before the war, has reopened his shop in expectation of increased post-war trade.

Another Tyler firm, Maddox Air-Conditioning and Refrigeration Service also has enlarged its quarters in preparation for anticipated post-war volume.

Every refrigeration man he talked to, Mr. McBrien reports, is thinking in the direction of vastly expanded business in the post-war period. Plans to go into the retail business are reflected in the numerous moves to larger quarters.

NEW C-H OFFICE

Cutler-Hammer, Inc., opened a sales office at 108 North Main St., South Bend, Ind. Terry Fischer, Cutler-Hammer South Bend representative, will be in charge.

VIRGINIA REFRIGERANTS

-"SULFUR"
-"METHYL"
-"METHYLENE"

Tested Purity for Service Surety

AGENTS FOR KINETIC'S
"FREON-12" and "FREON-22"
VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

The MARKET Place

The net rates for this department are as follows: minimum charge—$2.00, 25 words. Each additional word, 10c.

Bold type or all capitals: minimum charge—$3.00, 25 words. Each additional word, 15c.

Box number or address not included in word count. All classified advertising payable in advance.

Address all communications to this department:

CLASSIFIED ADVERTISING DEPARTMENT
THE REFRIGERATION INDUSTRY
812 HURON ROAD
CLEVELAND 15, Ohio

POSITIONS AVAILABLE

Thoroughly experienced REFRIGERATION ENGINEER by progressive Los Angeles ice cream manufacturer. Requires background in low temperature systems, freezing and mix equipment, steam boilers, electrical motors and cabinets. This is an excellent opportunity for a permanent and well paying job, salary being commensurate with qualifications. Write giving full details of past experience and pertinent personal data. Box G-185, Refrigeration Industry.

FIELD SERVICE MEN. Frigidaire dealer (Established 1925) in Northern New Jersey needs for immediate and post war activities, experienced household and commercial refrigeration servicemen. Assured future. Applications should contain complete information. Box G-175, Refrigeration Industry.

REFRIGERATION SERVICE MAN with knowledge of commercial refrigeration, to help develop commercial servicing department in expanding organization. Starting rate 90 cents per hour, plus commission, expense account, and car allowance. Give full details about yourself and your experience in first letter. Box F-53, Refrigeration Industry.

"Refrigeration Service Man, with knowledge of commercial refrigeration and air conditioning, to help develop commercial servicing department in existing organization already having services of outstanding refrigeration engineer. Starting rate $1.30 per hour, 40 hour week, time and a half time for all over eight to twelve hours, double time for all over twelve hours or Sunday work; expense account; transportation furnished. Give full details about yourself and experience in first letter. Box G-199, REFRIGERATION INDUSTRY.

EQUIPMENT WANTED

WANTED TO BUY: SURPLUS REFRIGERATION UNITS, PARTS, MOTORS, HOUSEHOLD OR COMMERCIAL. EDISON COOLING CORP., 310 EAST 149th ST., NEW YORK 51, N. Y.

WANTED—Ice maker—5 Ton capacity—24 hours. Write make, age, condition and price. McCarron Refrigeration Sales & Service, Medford, Wis.

"I want a job"

A free Want-Ad Service for returning fighting men

We are reserving this department for free POSITIONS WANTED ads of honorably discharged men and women of our armed forces. *The Refrigeration Industry* reserves the right to edit copy. The ads will run for one issue only but may be reinserted from time to time at veteran's request. VETERANS: Send your name, address, service unit and serial number and a description of the kind of job you're interested in (dealerships, sales, service) to Classified Advertising Department "b", *The Refrigeration Industry*, 812 Huron Road, Cleveland 15, Ohio. Below are the first returns:

Discharged veteran of the 81st Armored Regiment, 5th Armored Division, at present attending technical school courses in refrigeration, is anxious for a job in the refrigeration and air conditioning field. Box G-103, Refrigeration Industry.

Discharged veteran of 309th Infantry, experienced in sales, is interested in sales and distribution end of the refrigeration business. Box G-104, THE REFRIGERATION INDUSTRY.

I want a job in refrigeration. Twenty-four year old high school graduate, discharged veteran of this war, would like to break into and learn installation and servicing, preferably in the vicinity of Chicago. Box G-105, The Refrigeration Industry.

FOR SALE

2 Used Frigidaire Model T-80 Double Refrigerant Water Coolers complete with valves. Give an offer or write for full particulars. Tonnies Garage, Albers, Illinois.

INSTRUMENTS REPAIRED

Complete overhaul service on pressure, altitude, retard, compound retard, ammonia, freon and hydraulic gauges. Mail direct to Scientific Instrument Service, 302½ Riverside Drive, Burbank, California.

EL PASO DISTRIBUTOR NAMED BY G. E. APPLIANCE

El Paso Saw and Belting Supply company, 1309 Texas street, El Paso, Texas, has been appointed wholesale distributor covering the El Paso wholesale district for Hotpoint household electric appliances and Hotpoint-Edison commercial cooking appliances, effective immediately.

This Picture

of a particularly handsome Christmas tree—a 50-foot Monterey cypress first lighted in 1926—on the lawn of Clarence F. (Sandy) Pratt, San Francisco and Oakland, Calif., jobber, was made before war blacked-out such displays of happy good cheer.

Staring into this picture and beyond it, we somehow feel that this brilliant symbol of peace on earth, of men's goodwill, with the memories it brings of home and family and friends, must live on in the hearts of our magnificent fighting men and women, whatever their creed, wherever they are—as it lives on in the hearts of us here at home who this Christmas, again, are lonesome, too. . . .

This Christmas season, the United States and our mighty Allies of the United Nations are forging the victory which will bring new light into the world. Perhaps this is the last war-time Christmas. With that hope, with a solemn prayer that it be so, THE REFRIGERATION INDUSTRY, remembering the Anniversary which December 25th marks, wishes all its many friends

A Very Merry Christmas

Dependability doesn't happen...

IT'S *BUILT INTO* EVERY AP VALVE

NEW AP MODEL 204
AUTOMATIC EXPANSION VALVE

A new design of a famous and popular A-P Valve, the new A-P Model 204 AUTOMATIC Expansion Valve has many new features for improved operation on domestic refrigerators, beverage coolers, serum cabinets, and similar applications. One of these new features is the moisture-proof metal cap, providing absolutely tight seal against air and moisture for protection against freeze-up in the head, yet offering ready access to the adjusting knob.

Compact, small in size, precision-built throughout, sturdy, sensitive and leakproof, Model 204 has an adjustable range of from 15" vacuum to 35 lbs. pressure. Rated at ¼ ton Freon and ½ ton Methyl Chloride and Sulphur Dioxide, it is designed for long-life, dependable service. For further details, write for Bulletin No. 407A.

AUTOMATIC PRODUCTS COMPANY

2486 North Thirty-Second Street • Milwaukee 10, Wisconsin
Export Dept.—13 E. 40th St., New York 16, N. Y.

DEPENDABLE
REFRIGERANT VALVES

Stocked and Sold by Progressive Refrigeration Jobbers Everywhere — Recommended and Installed by Leading Refrigeration Service Engineers.

Merry Christmas

to all our customers . . . .

You have made it a merry one for us by your loyalty and your patience with us during this past year of trials. Every one in our organization hopes you enjoy the holiday and wishes you and yours a very

Happy New Year

WILLIAMS & COMPANY, INC.

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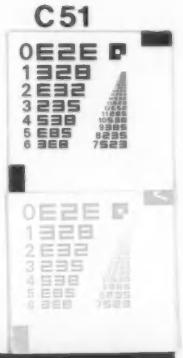
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